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# PAPERS TO BE READ.

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# THE PRESENT DISCONTENTS IN ENGLISH EDUCATION.

Papers to be read at
THE NORTH OF ENGLAND EDUCATION CONFERENCE.
BRADFORD.
On Friday, January 2nd, 191~~3~~. 4

## THOUGHTS ON PRESENT DISCONTENTS IN ENGLISH EDUCATION.

By Mr. M. E. SADLER, C.B.
(Vice-Chancellor of Leeds University).

Principal Griffiths, the brilliant and witty, but rather sardonic, Cambridge scientist, who returned some years ago to his native land as Principal of University College, Cardiff, was President of the Education Section at the British Association meeting last September in Birmingham. He delivered an address which was racy and well-written, but which made upon the minds of the people a more discouraging impression than he seems to have intended to convey. His paper had the merit of being very much to the point. For some months previous there had been what the meteorologists call a "depression" in English educational opinion. It was a temporary mood, but while it lasted the skies were grey, the horizons misty, and spirits overcast. It must have been during this time of passing discouragement that Dr. Griffiths set to work to compose his address. He might have called it "Thoughts upon Present Discontents in English Education."

There are signs that when he came to the point he shrank from obtruding much of his personal opinion. He probably found that his own knowledge of certain parts of English education was, like everyone else's, exceedingly limited; that he had been in the habit of harbouring rather vague opinions which reflected the dissatisfaction of other people and occasional disappointments of his own; but that, when it came to offering to the British Association and the public generally a considered statement upon the educational outlook, he did not himself possess that thorough knowledge and far-reaching command of evidence which his scientific training compelled him to regard as the only adequate foundation for concisely expressed conclusions. He therefore resorted to a device which looks much more scientific than it really is. He printed questions and sent them out broadcast for answers, with the intention of building upon these replies an estimate of the success of the existing educational system in England. More scientific than it really is, I say, because the value of opinion gathered by postal inquiry depends on a very careful selection of correspondents and upon a subsequent weighing of their replies and judgments which involve the possession of a knowledge of the personnel of English education far beyond that of any individual critic. When the Principal had got his answers, he set to work, or set somebody else to work, to bring out the percentages of favourable and unfavourable judgments. The results of these computations he communicated to the public in his Presidential address. The prevailing colour of the replies was grey or black. He reported an atmosphere charged with little of the electricity of hope or of successful endeavour. Local educational administrators, private correspondents of position, representatives of the teaching profession (apparently, if internal evidence is a guide, almost exclusively connected with elementary schools) were all in a gloomy mood when they answered the Principal's questions, and the grand total of their accumulated testimony amounted to dissatisfaction, if not to pessimism. Modern education, he inferred (in what follows I do not quote his words, but translate the inferences of his address into words of my own), might quicken wits, but is giving slight ballast to character. It results, perhaps, in a volatile intelligence, but produces little of intellectual grasp. Somehow or other, and nobody can precisely say why, its results were disappointing, its future doubtful, its expense enormous. The National Education Bill had run up to nearly thirty million pounds a year. What was there to show for it? Boys who were careless about their work, wanton levity of sudden strikes in the sphere of labour, self-indulgence and a passion for material things among the rich, a craving for wealth among those less well-to-do, a dimness of ideal, a faltering of judgment, an absorption in trivial amusements, these were the signs of some unwholesome habit in the body politic. The teachers, those who stand nearest to the actual work of education, instead of being buoyant with hope or quietly confident in the growing success of their labours, were querulous, grumbling at the conditions of their lot, crying for the moon. The local educational administrators, the engineers who turn the handle of the great bureaucratic machine, seemed as little pleased with the conditions of their employment. They appear to have expressed the wish that more administrative power should be put into their hands. If they could only be made more powerful they seemed to think that the causes of their comparative failure would be removed. And they showed signs of some disagreement. The small towns grumbled against the big towns; the boroughs grumbled against the counties; the Council School administrators grumbled against the Voluntary Managers. And if Principal Griffiths had sent out another sheaf of questions to the Roman Catholic clergy and the clergy of the Church of England he would have got from them another set of grumbles against the public administrators, who were taking patronage out of their hands and limiting the freedom of the older Voluntary School.

But when one came to look more closely into the texture of the evidence which Principal Griffiths had collected, one found that nobody on either side of the controversy had expressed a very clear idea of what he would have in the way of education if he were able fully to gratify his wish. Still less was there any sign, at any rate among those whom Principal Griffiths consulted, of the power of a social ideal, clearly conceived, ardently desired, dominating and directing the purpose of administration or instruction. This is the real weakness of the situation. You can never have any successful system of education unless it has a definite end in view. It may be an old-fashioned purpose, already out of joint with the rising forces of the age, but if it is a purpose reverently observed and loyally cherished, it has power to transfigure the humblest effort and to produce fine results out of feeble materials. And if the ideal has in it the strength of the future, if it is an anticipation of what is really coming, a vision of what is about to be, it can illumine the dingiest schoolroom, irradiate the most

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squalid slum, and make the trite and trifling details of teaching acts of creative power. The English education which Principal Griffiths reviewed is at the moment torn asunder by hesitancy as to ideals. It is puzzled, self-critical, harried by doubts, untouched by passion or faith. And on this sort of thing almost any amount of money is wasted. It has not in it the spark of life. It slips into routine. It is frightened of making a venture. It plays for safety. It dare not fight.

But look again a little more closely and you see cause for encouragement even here. Much of the hesitation is the outcome not of palsied will-power but of harassed fair-mindedness. The currents of modern thought are perplexing; the fog lies thick on the waters; the course of the ship of State is doubtful and dangerous. There are hundreds of thousands of upright and public-spirited English people who could not for the life of them say what kind of England, if they lived for thirty years longer, they hope or would like to see. And if you are doubtful of the goal towards which you are going, the whole business of education is affected by hesitancy and half-mindedness. But once let the breeze spring up and the fog clear away; once let the course of the ship be clear again and the current strong, and these very people who now hover between conflicting purposes would spring to their task with cheerfulness and hope and rejoice in the success of their labours.

And there are many signs, though Principal Griffiths seems to have allowed them to escape him, that the time is coming when a clear purpose will take the place of harassed uncertainty and when the main body of English education will feel the exhilaration of a clear aim. So far from English teachers as a mass being at the present time disheartened about their work, or disillusioned with their lot, there never has been a time within living memory when so many of them were enthusiastic about their work or so willing to give unsparingly of the leisure of their holidays to self-training and further study. Holiday Courses in England are hardly more than twenty years old. Year by year the number, the attendance at them, their success, increase. Only those whose business it is to watch this significant movement know how far-reaching it is, how deeply it is affecting the educational situation. Thronged summer gatherings, attended by hundreds of teachers for two or three weeks together, are now so usual as hardly to receive notice in the press. Again, any new contribution to educational thought is hailed at once with interest and eager curiosity. When Jacques-Dalcroze came to England a year ago the largest halls could hardly hold the number of teachers who wished to hear him. If Madame Montessori came to England (as I hope she may), she would have to give her lecture twice over in every town she visited. Mr. Edmond Holmes, who is the Gordon Craig of English educational literature, has an audience of readers upon a scale which, in his lifetime, Matthew Arnold utterly failed to find. Again, if you go to any experienced inspector, he can take you to schools in his district where there is work of high promise and originality, due to the character or artistic power of some perhaps obscure teacher, and bearing fruit in a new kind of discipline among the children and in a new relation of confidence between the school and the home. Platform hacks talk about the chaos of English education. It is a cheerful chaos. It is growth, not decay, which is the cause of the confusion. There are scores of private schools, even the names of which are not known to the wider public, which are full of a

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fine spirit of educational originality, combined with a reverent regard for the wisdom of precedent. Principal Griffiths did not mention the education of girls. Yet, after all, girls are more than half the English race. We live in an age in which girls' schools have for the first time in England been created on a national scale. What body of educational opinion is there amongst us so well-considered, so honest and yet so hopeful as that of the Head Mistresses and Assistant Mistresses of our Secondary Schools for girls? Principal Griffiths' picture is like a painting by some of the Dutch masters, a little dark and gloomy; but even he has his high lights. He spoke with just enthusiasm of the promise and performance of the tutorial classes organised by the Universities in union with the branches of the Workers' Educational Association, and with the help of Local Authorities and the Government. Perhaps, by concentrating too much of his praise on this one feature of the educational outlook, he did unwittingly a little injustice to other tendencies and other movements, in their way not less encouraging. This upthrust of interest in the things of the mind, which is a mark of the best working-class opinion in England at the present time, is one of a dozen signs of hope for the future; but it is also a sign and an outcome and a cause of unrest. We are in for stormy weather, but there is something exhilarating in a storm.

Where, with all his effort to speak fairly and to strike a true balance, Principal Griffiths failed in his survey of English education was in forgetting the fact that during the last ten years we have had to grapple with a triple task. We have had to pay up the arrears of three decades of neglect of Secondary and Higher Education. We have been obliged, in order to bring the provision of teaching a little nearer to the standards of the liberal profession which in our hearts we know it should be, to pour out money in raising the stipends of the teachers above the beggarly pittance with which the blundering economy of an earlier generation was content. And, lastly, we have had to create, within the brief space of ten or fifteen years, a body of educational experience, both in the offices of the public authorities, central and local, and also among those associations of teachers the strength of which is one of the distinguishing marks of this period in our educational history. Every pound which each of us pays in rates or taxes for education is partly the liquidation of a great debt, a debt of arrears, which we have inherited from the past; it is partly a contribution towards the effort to make the material side of a teacher's life less inadequate to the just claims of a great profession; and it is partly an expenditure upon the necessary work of creating a new educational tradition, based upon experience, upon inquiry and upon experiment. Under this threefold burden the English taxpayer and rate-payer groans and grumbles. It is a pity that Principal Griffiths missed his chance of reminding us why it is we have to pay so much, and of heartening us with the hope that, after all, what we are now spending is wiping out a discreditable debt, is helping to form a teaching profession worthy of the name, and is gathering for our successors that mass of experience which is the only stable foundation of a new educational tradition.

What Bacon said about the planting of colonies is true of the making of an educational system: "It is like the planting of woods. You must make your account to lose almost twenty years' profit and expect your recompense in the end."

# THE INFLUENCE OF THE OLDER UNIVERSITIES ON THE CURRICULA OF SECONDARY SCHOOLS.

By MR. A. C. BENSON.
(President and Fellow of Magdalene College, Cambridge.)

At the time when the Tichborne case was attracting the attention of the public, a mob-orator was heard in Hyde Park to say with much emphasis that he did not care two straws whether the claimant was Sir Roger Tichborne or not; all he asked was why a poor man should be kept out of his rights.

When discontent is in the air, we must be on our guard against this kind of attitude; before we criticise, we ought to feel pretty sure that things are amiss, and that the defect is a remediable fault, and not a mere defect of quality, inherent in the imperfection of things. We may spend a long, laborious, and not very happy life, in tracing the cracks which run through our social structure; but criticism by itself is a merely disconcerting business, and a destructive critic is often little more than a very tedious companion.

The educational discontent of the present time is not of this kind; it is an intelligent, sympathetic, even a good-natured discontent. Of course, all expert criticism is apt to arouse a mechanical reverberation among the large class of people who like to feel that they are not responsible for their own failure; but it may be said that there are a good many educational critics now in the field who really understand their business, quietly investigate and face the facts, and make fruitful suggestions.

I am going to try in a short paper to lay what I believe to be a substantial case before you. Let me briefly indicate my position in the matter. In the course of twenty years' experience as a Public Schoolmaster, I became very much aware of an educational gulf, into which I saw a good deal of promising and intelligent material disappearing. I saw a number of boys start in the race with a lively inquisitiveness, who either, so to speak, never reached the tape at all, stopping listlessly by the way, or reached it in a very helpless condition. I saw, or thought I saw, a manufacture of intellectual cynicism and intellectual indifference on a large scale; and it appeared to me that the result of the Public School curriculum on far too many boys was that they ended by disbelieving in the pleasure and interest of intellectual things. Of course it was quite possible that this was inevitable, and that whatever the curriculum might be, the same result might ensue; or, again, it might have been a failure of method rather than of subject. But I tried certain experiments, which I need not here detail, which convinced me that it was to a large extent the fault of the subjects taught, and that they proved to a large number of boys uninspiring and uncongenial.

Then I went on to the University, and had to teach a number of young men of average intelligence how to write essays; and what I saw made me perfectly certain that the intellectual interests had not been so much eliminated as suspended, and that in all probability the faculties had been there all the time, only dormant.

Since then I have had a good deal of experience in the working of educational systems in connection with the Board of Education, a County Education Committee, the Oxford and Cambridge Joint Board, and the Teachers' Training College at Cambridge. I have really had an opportunity of seeing how the whole thing works, and the conclusions which I have formed have not been mere theories, but deductions from very real experience.

I am going to isolate one single problem from the other problems which abound; for in trying to track the particular defect which interested me to its source, I became aware, not to go too much into detail, that the source of the mischief lay in the Universities. I came to the conclusion that, both directly and indirectly, the University of Cambridge, at all events, exerted a cramping and stunting control upon the school curriculum, partly by our method of encouraging and rewarding intellectual promise and partly by the compulsion which we exercise with regard to particular subjects. The latter is the more serious misdemeanour, because I feel fairly sure that my University does its duty very well by the Honour men; but the pass-examinations of the University have few rational defenders. They are admitted to be a helpless compromise, and they sacrifice standards and stimulus alike to the conflicting claims of teachers and tories, who prefer that a subject should be ill taught rather than frankly abandoned.

By rigidly limiting alternatives, by retaining what claims to be a general education, but is in reality a meagre kind of specialism, and by taking advantage of the necessities of class-instruction and the co-ordination of subjects, the older Universities lay a paralysing hand on the school curriculum. The chain of causes is simple enough. A certain number of boys are intended for the University, and have to be prepared accordingly; a certain number of parents cannot make up their mind whether their boys are intended for the University or not, and wish them to be provisionally prepared for it, and the result is that the curriculum of a school has practically to be adapted to the requirements of the University. The larger Public Schools are the worst sufferers, because a larger proportion of their boys go to the University; the lesser schools have partly extricated themselves from the control; but again as an examining and inspecting body, the Universities have a wide influence in regulating the curriculum of Secondary Schools, and it is very difficult for any one school to isolate itself from the general tendencies of education and take a wholly independent line.

Now, as we all know, the chief difficulty of education nowadays, which meets us at every turn, is the congestion of the curriculum. It is a perfectly inevitable difficulty; it is but the clashing of the expansion of the modern world with the old educational tradition. It is on the one hand the ancient humanities; on the other it is the new romantic movement in literature, the development of history as a science, the immense increase in sociological and geographical knowledge, and most of all the incredible growth of scientific knowledge in every department. The first point of all is that education ought no longer to be divided as ancient and modern, but as literary and scientific; and our first aim must be to create a new balance; a literary education with a tincture of science on the one hand, and a scientific education with an admixture of literature. This should enable the man trained in literature to have a logical hold on facts, and the scientifically trained man to cultivate a power of expression; to say nothing of the value of sympathetic imagination, which is often destroyed by specialism. The end of it is that men should acquire an interest in ideas; that literature should not stand for culture apart from knowledge, and that science should not stand for knowledge apart from culture.

The mischief of the present situation is simply this: that by demanding a modicum of ancient languages as a *sine qua non*, the literary education is to a great extent limited in range and extent. A boy trained in Greek and Latin on the usual methods has to face the fact that it must become the core of his education, and that the time available for all other subjects is not very great. While to that I must add that my experience has shown me quite beyond the possibility of doubt that there are many boys quite capable of being affected by intellectual interests, and even literary influences, who are not responsive to the classics at all. I do not for a moment underrate the supreme influence of Greek over a mind with real linguistic and literary capacity, but it is a high and guarded fortress, and entrance is not easy. I do not myself regard the literary influence of Latin very enthusiastically. Its books of genius and charm are rare; but its claims to provide a mental gymnastic, and the fact that it is the basis of so many European languages, though not to my mind very conclusive reasons, cannot at present be disregarded. The disuse of Latin as an element of literary education is not a practical question just yet, and therefore for the relief, both direct and indirect, of the curriculum, the main attack must be made upon Greek. However reluctant one may be to concentrate the attack upon Greek, and with whatever reverence one may regard it, one is conducted to Greek as the one real assailable point by practical considerations, as surely as an Athenian was conducted from the Piræus to the city between the long walls, admitting of no divergence from the route.

My case then is simply this: that in the interests of the curriculum, the time has come for Greek to become an alternative on the literary side of education. And the significant fact is that the Headmasters of Public Schools have practically been converted to this position in the last decade, while if it is asserted that this means the disappearance of Greek from the lesser Public Schools, the plain reply is that it has already disappeared as a leading subject.

There is a scheme which is now much in the air to provide for an examination to test the progress of a boy's general education at the time when some measure of specialism becomes advisable, and a further examination at a later date to test special proficiency in more advanced studies. It is very necessary to provide some method of counterpoise to excessive specialisation. But one thing is quite certain, that a boy's education, just at the time when he is capable of profiting by reasonable specialisation, cannot any longer be allowed to be suspended and docked by having to acquire a miserable knowledge of the elements of Greek, a process fruitful in disgust, and without any educational value whatever.

If this base necessity can be disposed of, and a wider choice of subjects for the entrance examinations of the older Universities can be provided, the baneful grip upon the curriculum will be relaxed, and a real co-ordination of studies according to aptitude may take the place of a perfectly fruitless rigidity.

I cannot now venture to predict the direction which the expansion of the curriculum will take. The claims of English are paramount, and a real mastery of at least one modern language must be secured. It is probable that an acquaintance with English literature, together with a power of free expression in English, combined with a similar treatment of a foreign language, can give the ordinary boy as much in the way of stimulus and contrast as he can well profit by. But so much mastery as is involved in the above suggestion must be a first article of the educational creed, and space must be ruthlessly cleared to provide it. The further claims of mathematics, science, history, and geography, scripture knowledge, even music and handicraft, must be adapted to this one central necessity. That is the literary side; and at the same time, on the scientific side, it must be provided that a training in English literature and expression, and the secure knowledge of a European language, should not be extruded.

Another great incidental advantage of such a scheme is that the Universities could then raise the standard of their pass-examinations, instead of so far compromising with the exigencies of the time-table as to accept a standard in classics which is ludicrously and discreditably low. The Tory position in the Universities is frankly to abandon all standards of classical attainment among pass-men, if only the subjects can be retained as a fence which has no educational value, but which is difficult and inconvenient to surmount.

I would say in passing that I do not here attempt to criticise the newer Universities. From all that I know of them, it is obvious to me that they have a wider outlook, and adapt themselves far more frankly and sympathetically to meet modern educational needs. But the wealth and prestige of the older Universities give them an unreasonable degree of independence. They are apt to excuse themselves for a lack of vital knowledge of educational problems by cherishing the lofty belief that they stand for culture against materialism; and high-minded tenacity, backed by secure endowments, is a thing which is strongly entrenched.

But I am convinced that a great liberalising of the curriculum is both inevitable and imminent. In certain directions, and notably in that of science, my own University is well to the front. But our fault rather lies in nurturing a rather sterile and rigid ideal of culture, and in dismissing subjects which appeal directly to the interest and enthusiasm of students as soft options—that phrase is a very sharp sword in the hand of the ungodly and malicious!

The one object which will, I believe, in a very short time claim a foremost place in the school curriculum, is the study of English literature and the training of expression. It has been creeping slowly into the schools, the old theory being that it could be acquired incidentally, as pigeons pick up peas. The result has been that it has been attacked too often in a half-hearted and amateurish fashion, and put into the hands of untrained and unequipped teachers.

Side by side, then, with a wider choice of alternatives, I want to see the development of very serious Schools of English Literature. The enormous growth of the Historical Tripos at Cambridge, which is now in point of view of numbers ahead of all the other Triposes, shows clearly enough that there are a number of men in search of something which may bring them in direct touch with political ideas, and practise them in the art of lucid and emphatic expression. But even so there are many men of literary instincts without historical aptitude; and I desire to see English studied, not only with a view to expression, but philologically, verbally, critically and historically, not going too much into origins and sources, but dealing with the development of our literature from Chaucer onwards.

One of the chief causes of educational discontent arises from the queasy sensation of inanition in the victims of traditional methods. There are many minds nowadays on the lookout for interests and ideas, who do not quite know what they want, but cannot find satisfaction in the more technical prescribed studies. It is all this material which I wish to sweep into the net; and I wish to train the power of thought directly through the medium of the familiar tongue which corresponds to familiar thought, and no longer by the process of winding our way tentatively and lamely into the ideas which lie behind the languages of other nations old and new. I do not mean that linguistic gymnastics must be neglected, but it is advisable that all should be taught to deal with thought and expression directly and in the natural medium of our own incomparable tongue.

I want, then, to see, on the one hand the restriction of subjects removed, and on the other a forward policy adopted in the direction of English teaching and native thought.

The great difficulty is to balance conflicting claims; but the point is to *act*, in the spirit of Dr. Johnston's famous apophthegm. He said that to lose time in deliberating what subject to begin teaching to a boy was like spending time, on getting up in the morning, in considering which foot should first be inserted into a man's nether garments; and if the homely force of his conclusion cannot decorously be quoted here, it may be summarised by the much tamer statement that the end of putting clothes on is, after all, not to remain unclad!

## PROVISIONAL ABSTRACT OF A PROPOSED ADDRESS ON
## PRESENT DISCONTENTS IN EDUCATION.

By A. H. FISON, D.Sc.
(Secretary to the Gilchrist Educational Trust: Lecturer on Physics at Guy's and the London Hospitals.)

The subject of discontent suggested by Mr. Sadler in the address with which he has opened the proceedings of this Conference is one upon which every teacher can speak from the fulness of his heart. Discontent, sometimes bad, is more often entirely good. All educational reform has been born of discontent, and the educational progress of the near future must be the result of the discontent of to-day.

There must be something of the idealist in every teacher, and his discontent is born of the shock between the ideal and the actual. In my own case such a shock occurs with never failing regularity early in the winter session, when the ideals that have grown up in the summer holiday come in contact with the actuality of the classroom. I find further that this annual experience is not modified by the recollections of disappointments of former years, and I have now come to regard myself in this respect as an incurable optimist.

My own chief discontent, which I will mention at the close of my address, is one with which I do not feel competent to deal. Next to this the discontent that I feel most strongly is with the too generally accepted view that in education the teacher is the very active agent and the student the very passive recipient. This view will no doubt be indignantly denied by every teacher, but it is none the less the view that is very generally acted upon in practice. Indeed, such pressure is brought to bear upon the teacher in so many instances that it is almost inevitable that he should act as if he held it. It is implied in much of the educational methods of Universities and it is scarcely possible to act upon any other view in preparing students for modern examinations.

My own experience as a teacher has been almost exclusively concerned with men in their first year at the University of London. The view I have indicated is the one with which men come to the University from the Secondary School. They are prepared to accept every word I utter with dogmatic reverence, to take copious notes of my lectures, and to remember as much of them as possible in the hope of obtaining thereby a place in the examination lists. It is a new idea to them that they should treat my lectures with such apparent disrespect as to exercise their own judgments or bring their own powers of criticism to bear upon the subject of the lectures. It is a new idea to them that the only education worth having must be in the main the work of the student himself. The same view of education obtains in the laboratory as definitely as in the lecture-room.

It is a view that is encouraged by the system of education by wholesale lectures. When the greater part of the student's time is occupied in listening to another man talk, and when his remaining time is chiefly occupied in making copies of pages of imperfect notes of what he has heard, there can be no opportunity for independent thought on the part of the student himself. I do not think that any student should be allowed to attend more than two lectures a day; one would, I think, be the ideal number, and note-taking, except at the special dictation of the lecturer should be prohibited. In my own University a record is kept of the student's attendance at the lectures, but no record is kept of his attendance in the study and the library. I should like to see this method inverted and the student allowed to attend the lecture or not according to whether he found it educationally useful.

There is this to be said in favour of the view I am criticising, that except in the case of the brilliant men, who form, perhaps, 10 per cent. of the whole, it defines the only process by which students can get through most modern examinations. The examination syllabus covers so extensive a ground that it is only possible to cover it superficially in the allotted time; it is out of the question for the student to spend time in mastering the fundamental principles upon which the subject of his study is constructed. Few teachers can dare accept the risk of encouraging the student to do it. Every examiner knows the disaster that attends the setting of a question at all off the beaten track, in which the student is left to his own interpretation of first principles, and the examiner who does this brings upon himself general execration. The general practice of regarding one-third of the total marks or thereabouts as sufficient for a pass marks the last stage of absurdity of the modern examination.

The ideal method is, of course, to abolish the examination entirely and to grant degrees and certificates solely upon the report of the teacher. Probably the time is not ripe for a general application of such a principle.

Other discontents of which I am conscious are with :—

(*a*) The narrowing effects of extreme specialisation, especially in Science. and, in Science, specially in students who have worked their way up to the University from the Public Elementary School, since these have less opportunity than others more favourably situated of coming into contact with the general culture of social life.

(*b*) The effect of the severely organised method that is a necessity in modern education of destroying the individuality both of the naturally inspired teacher as well as of the naturally inspired student. I can scarcely imagine a Newton or a Darwin to survive the course of study and the restrictions to which he would be subjected in my own University without the loss of a great part of his inspiration. I have an uneasy feeling that this effect is already showing itself in the diminution of the number of great men of to-day as compared with the number of a generation ago.

(*c*) The absence of joy in work itself, which is a characteristic of so many students.

(*d*) The assumption that every one is fitted to benefit by a University education. The struggle of the hopeless duffer in his persistent attempts to pass an examination that is beyond his power is the real tragedy of education.

(*e*) The tendency to regard development along intellectual lines rather than development of character as the supreme aim of education. This is the discontent that I feel most deeply, but I must leave its discussion to others with a wider experience and a deeper spiritual insight than my own.

# MEDICAL AND CARE.

Papers to be read at
THE NORTH OF ENGLAND EDUCATION CONFERENCE, BRADFORD,
On Friday, January 2nd, 1914.

## SOME POINTS FOR CONSIDERATION IN THE DIAGNOSIS OF MENTAL DEFECT.

By GEORGE A. AUDEN, M.D., M.A., Cantab., D.P.H., M.R.C.P. (Lond.), School Medical Officer, Birmingham.

One of the aphorisms with which Lord Bacon begins his Novum Organum, and one which is most frequently quoted, runs as follows: "In the domain of human experience, knowledge and power are co-extensive; for if the cause is unrecognised the full effect is missed. Nature can only be conquered by obedience to the laws of Nature and that which on theoretical grounds has the form of a cause appears in the form of a guiding rule in practice."* *i.e.*, we must patiently observe Nature if we wish to control her operations. Our "rules" are merely copies and adaptations of the "causes" which we see at work in the external world.† The truth expressed in this aphorism, though familiar to philosophers from Aristotle onwards, is not always clearly recognised, and in the light of recent results it is imperative that we should from time to time re-examine the validity of the premises upon which we base our efforts. In no subject is this revision of greater importance at the present time than in that of the education of mentally abnormal children, particularly as the question has only recently come into prominence, and as the differentiation between the various grades now assumes a more direct importance, both individual and social, in view of recent and prospective legislation.‡ What is wanted is a clear conception of the standards by which the mentality of children is to be judged, and it is to the consideration of a few points in connection with the subject that I wish to draw your attention this afternoon.

Those of you who are familiar with the Epileptic and Defective Children Act, 1899, will remember the definition of the children who may be certified under that Act. It describes them as "children who, not being imbecile and not merely dull and backward, are defective, that is to say, by reason of mental (or physical) defect are incapable of receiving proper benefit from the instruction in ordinary Public Elementary Schools." The criterion here is obviously an intellectual one.

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* *Novum Organum, Book* 1, *Aphorism iii.* Scientia et potentia humana in idem coincidunt, quia ignoratio causae destituit effectum. Natura enim non nisi parendo vincitur, et quod in contemplatione instar causae est, id in operatione instar regulae est.

† Cp. Novum Organum. Edited by T. Fowler. Oxford University Press.

‡ Mental Deficiency Act, 1913, and the proposed Amending Act to the Education (Epileptic and Defective Children) Act, 1899.

and it is plain from the whole tenor of the Act that it was expected that by a modification of the curriculum and a longer period of school attendance the children who came under it could be brought up to the same average intellectual level as their quicker-witted comrades.

On the other hand, the definition adopted by the Royal Commission rests entirely upon conduct. The feeble-minded is described as "incapable by reason of mental defect existing from birth or early years of competing on equal terms with his normal fellows or of managing himself and his affairs with ordinary prudence."

Another definition of some interest is given in the Local Government Board (Mentally Defective Persons) Order, dated December, 1911. It runs as follows: "Persons . . . who by reason of mental defect are incapable of receiving proper benefit from ordinary instruction, or cannot be properly trained in association with other persons in ordinary schools or institutions, or are incapable of using ordinary means or precautions for protecting themselves from injury or improper usage or treatment, or are incapable of maintaining themselves by work." For the purposes of the Order such persons shall not be more than twenty-one years of age.

When we come to the Mental Deficiency Act, 1913, we find that the definition is a two-fold one, dependent upon criteria of conduct on the one hand and intellectual capacity on the other. Feeble-minded persons are divided into two groups, viz. (1) "Persons in whose case there exists from birth or an early age mental defectiveness, not amounting to imbecility, yet so pronounced that they require care, supervision and control," and (2) "children who by reason of such defectiveness *appear to be permanently incapable of receiving proper benefit from the instruction in ordinary schools*."

For the first group control of action and ability to adjust the self to the environment is the criterion, whereas for the second it is the presumption of permanent intellectual deficiency. Now, as the age at which the large majority of children leave school is thirteen to fourteen years, the word *permanently* in the above quoted definition can only have a relative and constricted meaning, and it is around this word that I wish to centre my remarks.

To those who have had any experience in teaching nothing is so striking as the wide variations which are to be found in the mental capacities of any large group of children, irrespective of physical age. Every class or form will show its dullards, its mediocrities and its exceptionally intelligent children. These variations are due, not merely to differences in the speed of acquisition of knowledge and in the formation of the necessary mental associations, but also to differences in the degree of knowledge acquired. We find, moreover, that these variations often show themselves in varying capacities for acquiring different types of knowledge, and that while one child may show general dullness of comprehension on all sides, another may show a deficiency limited to one or other of the special capacities, *e.g.*, the capacity for making arithmetical concepts or that for acquiring language.

Some of the abnormally advanced children maintain the same high level throughout their mental development, but others drop down to the average, or even below it, later on in their career.*

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* Cp. Sakaki. "On abnormally intelligent scholars." Internat. Archiv. für Schulhygiene. Vol. VII., p. 509. The author gives seven types of abnormally intelligent children.

Some minds appear to reach an intellectual maturity at a much earlier age than others, while those of us who have a clear recollection of our own school days will be conscious that in some departments of intellectual attainment our mental development has continued long after we have left school, despite the absence of practice in these departments.

The distribution of mental capacity throughout the community as a whole, follows the "normal curve of frequency." Galton[*] has shown that in any given section of the community, variations in mentality may be represented in the form of a regular curve arranged on either side of the mean average, with the imbecile at one end and the genius at the other. A variation of this kind is always the result of the operation of a large number of small causes acting simultaneously, and if mental capacity, equally with mental deficiency, were simply the result of causes acting with mathematical impartiality without other disturbing factors, the imbecile would be as rare as the genius. We know, however, that this is unfortunately not so, and we may argue from this fact that some other factors are at work to upset the normal distribution in the lower levels of mentality and to produce a large increase in the number of children who exhibit mental defect. The contributory causes which come under this head are tuberculosis, alcohol, specific disease, etc., and it is apparent that the influence of these causes assumes an increasing importance in the lower grades of the curve. Goddard,[†] too, has shown by the examination of 1,550 children in Elementary Schools by means of the Binet intelligence tests that there is amongst them a normal distribution of mental capacity Of these children, 78 per cent. graded as normal, 4 per cent. were more than a year in advance of the normal of their age, and were the talented children; 15 per cent. were behind their age, normal—*i.e.*, exhibited varying grades of retardation; while 3 per cent., being four years behind the average attainment of their age group, appeared to be mentally defective.

If a considerable degree of variation around a mean of mediocrity is thus compatible with normal mentality, it becomes important to determine where this normal variation shall be considered to end and where true mental feebleness begins, and for this purpose it is necessary to make an attempt to discover the underlying cause of these differences.

Recent investigations[‡] have tended to show that the aptitude for making mental acquisitions or for the performance of intellectual acts depends upon two distinct factors—*i.e.*, (1) The "general intelligence" or innate all-round mental efficiency which is correlated with the general energy of the whole brain-cortex; and (2) the "special capacities,"[§] each correlated with the activity of special systems of nerve cells more or less localised or focal in certain areas of the cortex, which in many cases appear to be complete and distinct functional units. Both these factors seem to depend to a considerable extent upon innate and hereditarily transmissible conditions of the brain cells. Thus if both the general intelligence and the special capacities are developed to an exceptional degree, the result is

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[*] Cp. Essays in Eugenics.

[†] See Cornell, Medical Inspection of School Children, p. 408.

[‡] Burt: Child Study: Vol. IV., 1911; Hart and Spearman. Journal of Psychology; Vol. V., Pt. i. p. 57.

[§] To prevent confusion the term "capacity" is used throughout his paper in preference to the terms "faculty" or "ability."

"talent," and the hereditary transmission of talent is beyond dispute. Similarly, if both factors are reduced, the condition of feeble-mindedness results, and there is abundant proof that feeble-mindedness is transmitted. But experience is teaching us that these two mental factors may vary reciprocally, so that we may find reduction in the general intelligence, combined with a moderate or even high degree of development of one or other of the special capacities or conversely an average general intelligence may accompany a reduction in one of these special capacities.

Moral control and conduct on the other hand depend upon the ability to form generalised ideas and by the aid of reason to discriminate and choose between two alternatives, a discrimination which implies consistency and stability or "character"[*] dependent upon will. Kuhnert has described Moral control by the analogy of a three-storied house, each story only existing by reason of the existence of the other two. The ground floor is Perceptive capacity (Erkenntnisvermögen); first floor, Capacity to resist impulse (Widerstandsvermögen); second floor, Capacity for willing (Willensfähgkeit). The question of moral control, however, does not come within the scope of this paper. One of the distinguishing features of feeble-mindedness is the paucity of generalised ideas, or rather a contraction in the scope of ideas and it is plain that these are qualities which are not measurable by any scale of mental tests which can be devised, but can only be gauged by the conduct which results. To use a trite expression, "The proof of the pudding is in the eating," and this must remain the criterion upon which any course of action must be based.

A distinction of this kind between the mental deficiency which shows itself by deviations of conduct and that which shows itself in an intellectual deficiency, has long been recognised by psychiatrists and finds expression in the statistical tables suggested by the Medico-Psychological Association, which are adopted by all British Asylums. Here the heading "Congenital or Infantile Mental Deficiency" is subdivided into (1) Intellectual, (2) Moral. In this connection it may be added that the validity of the distinction is proved also by various forms of dementia, in which the special capacities may long survive the degeneration of the general mental efficiency and the loss of the capacity for control of conduct.

Now the majority of children presented for examination under the Education (Epileptic and Defective Children) Act are selected by their teachers, because they have failed to acquire knowledge in "the three R's" at the same rate as other children of the same average age, and it is necessary, therefore, to determine whether the intellectual retardation is (a) temporary, and therefore transient, or (b) due to an inherent inferiority of the separate faculties which will render them merely less capable than their fellows, but will still allow them to maintain a humble position in their own sphere of life, or (c) whether it is due to a reduction in the general intelligence sufficient to render them unable to conduct themselves or their affairs with ordinary prudence. This is only another mode of stating that "the term feeble-minded cannot always be applied to children from the mere fact of their showing any given amount of intellectual retardation as measured by any scale of tests.*" In other words, an attempt must be made to discover whether the disability which is likely to result from the condition is one of intellect or conduct. Let us take as an example of a special capacity the first limb of the intellectual tripod known as "the three R's," that of reading:

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[*] Thus Herbart says "Character is decision of Will," cp. also Goethe, "The main foundation of character is resolute willing."

[†] Miklas-Bosbauer. Schwachsinnigenfürsorge. p. 54.

A child is presented who has the utmost difficulty in recalling the names of the different letter symbols and has not the slightest synthetic power for the recognition of sound values. He may perhaps recognise a few familiar two- or three-lettered words, which he evidently recalls as word-wholes, but for the rest he is totally unable to read a simple sentence. Owing to this disability he has no capacity to write from dictation and his composition is a mere meaningless aggregation of letters. Here is an example from a boy of fourteen years of age who attempted to write "Tom has a big dog. It has a very long tail. His name is Bob." "Thenin is a betil day theis a mren lianth tank is mtike is themen." This deficiency is known as WORD-BLINDNESS. Now in a less marked degree, this condition is surprisingly common, and though if it is present in this complete degree it is generally permanent, yet the lighter degrees are more transient and persist chiefly in the form of a permanent inability to spell correctly, though the persons who suffer from this disability probably never become quick readers. It is well known that the recall of the meaning of words spoken, heard, or read is localised in certain definite areas of the brain surface, and that these, though united into a single memory complex by association areas, are by no means equally responsive, and that the relative power of the different recall-mechanisms differs in different individuals, so that readers are described as belonging to the so-called visual, auditory, or motor type. It is frequently found that such children, in whom the visual-recall centre does not function, are yet able to revive their recognition of the words through the auditory and motor-recall centres by spelling the word to themselves. While this condition may be associated with a general diminution of the general intelligence, and be one of the signs of a general feeble-mindedness, as is usually the case, it is by no means always so, and there are persons who, though word-blind, are yet able to manage themselves and their affairs with great credit and distinction. Further, it is found that in 75 per cent. of cases of word-blindness there is an hereditary predisposition to the condition.† Quite commonly, when examining such children it can be elicited from the parents that one or other (generally the father, for the condition is more frequent amongst males than females) was unable to read when at school, but that some ability to read has been subsequently acquired. They have, however, been able to maintain themselves and cannot be placed in the category of mentally deficient persons. An analogous but very rare condition is that known as WORD DEAFNESS, in which though the sense of hearing is present, there is an inability to recall the memory of meaning of words heard. Language is for such persons an unintelligible jargon, though they can repeat the sounds of the words which they hear, and help themselves by the aid of lip reading. Even amongst normal persons there exist great variations in the power of apprehending language, for while some persons have the greatest difficulty in acquiring any other language than their own, others, for example

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* Huey. Backward and feeble-minded children. p. 8.

† Warburg. Ueber die angeborene Wortblindkeit. Langensalza 1911.

Lord Macaulay and George Borrow, pick up one language after another with extraordinarily little effort. A description of the brain of a man who had mastered sixty-four languages has recently been published.

It is a recognised law of evolution that each individual repeats in a curtailed form in the course of his own development the developmental changes of his race. This law has been expressed in the phrase, "Ontogenesis repeats phylogenesis." It is also known that recent evolutive acquisitions show more instability and wider variation than those of more ancient date, both in the degree and the time of their appearance. It appears probable therefore that an explanation of the wide variations in these capacities for reading, acquisition of language, and as we shall see later, for calculation and music, is to be found in the period of their first appearance in the evolution of the human race and in their subsequent development.

Now the capacity for speech is the oldest distinctly human special faculty. Hence we find that, as we should expect, it has long become stable and that there is very little variability in the time at which it makes its appearance (fifteen to eighteen months), and further that the longer the delay the greater is the likelihood of congenital mental deficiency. Reading, on the other hand, is a very recent development, to be measured by generations only. Even so recently as fifteen generations ago the great majority of persons were totally illiterate. It is therefore hardly to be wondered at that great individual variations show themselves, and that the mechanism involved has not yet become uniform in its operation. In this connection it may be remarked that these word-blind cases are more frequent amongst the poorest section of the community. It is not to be inferred that this statement postulates the inheritance of acquired characters, for neither speech nor reading is inherited, but there is considerable likelihood that the facility for making the necessary associations is inherited. Thus Helen Keller tells us that what led her to speech was an innate predisposition which she expressed as a feeling "I must speak." * It can hardly be wondered at, therefore, that so complicated and so recently acquired a faculty as that of reading should show all degrees of development and that there should be wide differences in the date of its emergence in different individuals. These facts also explain the marked contrast between the frequency of varying degrees of word-blindness and the great rarity of word-deafness.

Writing is so closely associated with reading that it need not be further discussed, although it raises many points of interest. It may, however, be pointed out that here also variations are to be found, and that while the writing of some children becomes "formed" at an early period of school life, *i.e.*, shows a uniformity of style and character, that of others never assumes a thoroughly "formed" character.

Calculation, the third of the "three R's," shows analogous variations which are capable of an explanation on similar lines. Arithmetic is for us a comparatively recent acquisition. The introduction of the 0, or cipher, from India to Europe in the thirteenth century, to facilitate decimal calculation, marks the birth of modern arithmetic. [Geometry and algebra belong to a different category, with which we are not at the present moment concerned.] High mathematical capacity is found in a people with a long history of civilisation and education behind it, as, for example, amongst the Hindoos, but is almost totally absent amongst primitive races. In Uganda, for instance, the quickest native cannot get beyond simple fractions.

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* Kerr Love. The Deaf Child. p. 42.

If what has been said above concerning the variability of recent acquisitions is true, great individual variations in the degree with which it is acquired may be expected, and we find in very large numbers of persons the capacity of forming arithmetical conceptions and of performing mathematical manipulations remains very rudimentary. Professor A. R. Wallace,[*] in commenting upon this fact, says: "Probably fewer than one in 100 really possess the mathematical faculty, the great bulk of the population having no natural ability for it." On the other hand, the special capacity has rapidly reached a higher and more specialised development than any other, culminating in the mathematical genius of such men at Newton, Gauss, Laplace or Rayleigh. But another feature of this capacity has an important bearing on the question, *i.e.*, the tendency to precocious appearance, a tendency which is from the nature of the case more easily recognised than is precocity in the attainment of reading or language. The "Calculating Boy" is a well-known phenomenon. It is true that this precocious development of the calculating capacity is sometimes evanescent, but in quite a number of the instances described, *e.g.*, Gauss, Ampère, and Bidder, it has remained throughout life as a special capacity of the highest order. On the other hand there is reason to believe that with many persons the capacity remains *larval* and is late in its emergence towards mediocrity. It has not yet been determined whether this special capacity is associated with any focal area of the brain cortex; though Flechsig has defined an area which he considers may be associated with it. That the focal centre for calculation is distinct from that for the memory of words read is proved by the fact that word-blind children are nearly always able to read Arabic numerals with ease and correctness.

The capacity for music shows a general likeness to those already described. The difference between primitive and modern music is very largely that the latter is dependent upon harmony rather than on tone or rhythm. Bach and his immediate predecessors may be said to be the fathers of modern music, which is thus a recent acquisition. Under the circumstances, therefore, it is not surprising to find that the musical capacity varies very greatly, in full accord with the theory outlined above, and that the absence of tone memories or other forms of musical power is perhaps more frequent than that of any other special capacities. Probably 50 per cent. of the population[†] may be said to lack the musical ear, and great musical ability is relatively uncommon. Wallace remarks: "The gradations in musical faculty are quite as great as in mathematics or pictorial art, and the special faculty of the great musical composer must be reckoned many hundreds or perhaps thousands of times greater than that of the ordinary unmusical persons, who seem absolutely deficient in musical perception." Just as is the case with arithmetical powers, there is a tendency to precocious emergence, and "musical prodigies" occur with relative frequency. This precocious capacity is more permanent as a rule than is the precocious calculating capacity, as is evidenced by the achievements of such musicians as Mozart, Mendelssohn, Wagner, and many others whose talents showed themselves at an early age.

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[*] Darwinism, p. 470.

[†] Wallace. Op. cit. p. 471.

We have hitherto in this paper assumed a normal or average development of the "general intelligence," but we find in fact that the general intelligence capacity itself may show a very large degree of variability, irrespective of the development of the special capacities. In some instances there appears to be an actual precocious development of the general intelligence—children who seem to possess the mentality of an adult at an extraordinarily early age. Most of you will remember the story of Marjorie Fleming, the little poet and quaint letter-writer-friend of Sir Walter Scott.* She died at the age of nine. There are instances of lads who have been ready for a University course at 12-14 years of age. We have no English equivalent to describe these cases, and must call them *Wunderkinder*. But there is sometimes associated with the precocious or exceptional development of a special capacity a reduction in the general intelligence to such an extent that the individual is quite unable to manage himself and his affairs, and thereby belongs to the group of *Idiots savants*. Several of the "calculating boys," or lightning calculators, have shown very meagre general intelligence. Dase, for instance, who retained his calculating capacity throughout life, was but little above an imbecile, and could never master the simplest problem of Euclid.

I have myself talked to an idiot in a German institution at Alsterdorf who calculated in no more than 1 sec. the day of the week on which my birthday fell in a given year, calling it "soup day," Tuesday being the day on which soup formed the most striking item of the dinner. This statement is equally true of musical capacity. I have examined a low-grade idiot, who could only say a few words, which he repeated to all questions, yet was able to pick out any tune once played over to him. Phenomenal memory for events or trivialities is by no means uncommon. The Alsterdorf idiot mentioned above could tell at once the birthday of any person in the institution or the date of death of those who had died. And instances of this kind could be readily multiplied. The perception of form is also found occasionally exceptionally highly developed. Thus Gottfried Mind showed such a marvellous capacity for drawing cats that he earned the title "Der Katzen Raphael." The famous imbecile who has lived his long life in Earlswood Asylum, had he had a general intelligence equal to his capacity as a draughtsman and carver, would have earned a lasting reputation by the beauty of his work.

What, then, are the deductions which we seem justified in forming from the above facts, and what bearing have they upon the question of the diagnosis of mental defect?

In the first place we have seen that a distinction can be made between the general all-round mental efficiency and the capacities for making mental acquisitions of a specific character. Each of these appears to be, broadly speaking, genetically distinct, and exhibits an independence in the rate of growth and the degree of ultimate development. Modern educational methods have tended to give an undue prominence to the subnormal development of certain capacities, *e.g.*, those for reading or calculation, whereas deficiency in musical aptitude, tone deafness, or lack of perceptive power for form and colour are identical in character. If all the population were musicians or artists, the children showing these deficiencies would appear feeble-minded in contrast to their normal comrades, and if the condition remained persistent into adult life, such persons would not "be able to compete on ordinary terms with their fellows."*

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* For an account of her, see Brown, Horæ Subsecivæ. An entry in her diary shows that Marjorie had no special aptitude or delight in calculation! "I am now going to tell you the horible and wretched plaege (plague) that my multiplication gives me you can't conceive it the most Devilish thing is 8 times 8 and 7 times 7 it is what nature itself can't endure." In spelling she seems to have worked through the auditory recall-centre.

Secondly, we have seen that these capacities may show a tendency to precocious development on the one hand or to a retarded development on the other. This delayed emergence does not necessarily determine final incapacity, nor is it necessarily associated with a diminution of general intelligence, and it is to this form of delayed emergence that I have applied the term "larval." The introduction of a new term always requires some justification, but the analogy expressed by this term is really a close one, and is the more interesting from the well-known fact that in certain cases, especially amongst the Amphibia, unfavourable environmental conditions may prolong the larval condition almost indefinitely.

In both Scandinavia and Germany this distinction is drawn between the larval form or partial incapacity of one or other of the special faculties and that associated with reduction of the general intelligence. Thus, *Schwachbegabte Kinder* and *Svaktbegavede Börn* are contrasted with *Schwachsinnige Kinder* and *Aandsvake*, which describe the true feeble-minded children. The former are accurately described by the English term, "feebly-gifted," which was introduced by Mr. C. S. Loch in 1913 in his book, "The Feeble-Minded."† The term seems to have since dropped out of use, but its revival has much to recommend it, for it would help to fix and render more clear the differentiation between the two types of mentally abnormal children. This differentiation can be, perhaps, more readily understood from the accompanying scheme, which shows the distinctions which can be drawn between the conditions which may be found.

| GENERAL INTELLIGENCE. | | | SPECIAL FACULTIES. | | |
|---|---|---|---|---|---|
| Precocity | Temporary retardation (larval condition). | Final incapacity | Precocity | Larval condition or temporary retardation | Final incapacity |

Thus, each special capacity may be (1) in time of emergence precocious or larval, and (2) in degree exceptional, mediocre or reduced, and each condition of the general intelligence may be reciprocally associated with any of the conditions of the special faculties, giving different types of abnormality in each case. Thus:—

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* Groszmann has already pointed this out. "Generally speaking, a child is considered backward and lacking in mental alertness if he has difficulty in acquiring the school arts of reading, writing, and arithmetic, which are usually taken as standards of gauges of efficiency. If a child is backward in drawing, painting, basketry, or other activities of this kind, including, perhaps, even laboratory work, he will not readily be counted among the backward if he can read, write, and cipher according to the standard of the school. And yet the artistic person, or the constructive mind, from his respective point of view, will have a perfect right to consider those children defective who cannot develop along the lines of artistic and constructive activity, no matter how well they can read, write or figure."—Proc. Nat. Educ. Association, Indianapolis, 1910.

† Charity Organisation Series. Published by Swan Sonnenschein and Co., London.

| GENERAL INTELLIGENCE. | SPECIAL CAPACITY. | TYPE. |
|---|---|---|
| Precocious | Precocious | "Wunderkind", |
| Reduced | Precocious or exceptional | "Idiot savant" |
| Normal | Larval or reduced | "Feebly gifted" |
| Reduced | Reduced, rudimentary, or absent | "Feeble-minded |

My aim in this paper has been to draw attention to the fact that a *final* diagnosis of mental defect in children should not be made upon the results of intellectual tests alone, and to show the invalidity of the argument of the strict Eugenist that those who show these larval or reduced incapacities are thereby proved to belong to an inferior type, which should be earmarked with the stigma of inferiority. The education of these children in the large classes of the ordinary Elementary School is admittedly a difficult problem. To realise their full potentialities much special and individual attention is needed, but the labour expended upon them will, if rightly directed, bear fruit in after life, and it is well to remind ourselves of the truth of the adage, *non scholæ sed vitæ discimus.*[*]

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[*] Seneca. Ep. 106. § 12.

## EYESIGHT OF CHILDREN IN RELATION TO SCHOOL WORK.

By MARGARET CAMERON MACDONALD
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### HISTORY.

Exactly a hundred years ago, James Ware, of Chelsea, read a paper before the Philosophical Society of London in which he drew attention to his association between school work and short sight. In England no general action followed. In Germany, however, several school authorities considered the matter seriously, and twenty or thirty years later regulations were published chiefly as an outcome of investigation by Dr. Karl Lorinser into the conditions of school work in Bavaria, Baden, and Saxony. As early as 1840 it was found that eighteen per cent. of school children in Baden were short-sighted, whilst in the two upper classes at the High Schools the percentage ranged from twenty-five to fifty. In 1845 Dr. Beger, after close study of the problem, gave the same advice for avoidance and diminution of short sight as is given to-day. Dr. Beger was also one of the first physicians to discuss the different views as to the theory of short sight. Although the subject was taken up, no great advance was made until Hermann Cohn in 1867 published his exhaustive inquiry regarding 10,000 children attending thirty-three schools of all kinds. His figures gave rise to a scare in Germany and in this country. Hence began the campaign against school methods as if they were the sole cause of this evil.

V. Arlt, of Leipzig, in 1876, and Schoen, of Vienna, added to the store of knowledge, and similar investigations, chiefly concerning myopia, were carried out in other parts of the Continent. In 1882 Hertel, in Denmark, and Axel Key, in Sweden, discovered among other defects a large proportion of children in the schools suffering from headache, short sight, and anæmia. A few years later when the scare about myopia was dying down, another campaign was inaugurated in Denmark, concerning over-pressure in the High Schools. This campaign was incidentally of great importance to the movement for the protection of children's eyesight, because the investigations resulted in a general outcry against the long hours and continuous study, with the consequent fatigue of the eye muscles leading to eye strain. This campaign brings us to comparatively modern times, when in various countries and, last of all, in England a general scheme of medical inspection of school children has become part of the educational system, so that as Dr. Little has pointed out there can now be no excuse for not discovering errors of refraction and eye strain in their early stages. School oculists were first appointed in Leipzig in 1891.

### PHYSIOLOGICAL AND PATHOLOGICAL CONDITIONS.

Although the young child's vision is extremely acute, his eye is, as a rule, hypermetropic, or long sighted, owing to the shortness of the eyeball, and considerable muscular effort is required to see images in detail, more especially those near at hand. Also the higher brain centres are comparatively immature, and any attempt to do what might be called intellectual work is accompanied by extraordinarily rapid fatigue.

### (*a*) *Fatigue.*

Rapidity of fatigue may be well observed by testing the vision of infants. After the child has seen one or two letters, his attention wanders and he says he cannot see more until a brightly-coloured sweet stimulates him to make the required mental effort.* Dr. Kerr, I think, was the first to call attention to this subject. In 1893 he used to watch the children doing pin pricking in one of the Bradford schools, and noticed that in a comparatively few minutes the children one by one laid down their cards. Dr. Kerr showed that this was due to fatigue of the eye muscles, accompanied also by fatigue of the small finger muscles, the co-ordinating machinery for which develops much later in school life. This is now common knowledge, and as a result, since the beginning of the present century, educational methods (kindergarten, primary, and secondary) have been altered. It ought to be exceptional at the present day to find in the ordinary school curriculum close and continuous study of one subject for more than half an hour. An occupation requiring long distance vision should alternate at least at half-hourly intervals. This does not necessitate a change of subject; it is merely a matter of arrangement. Otherwise, fatigue from prolonged contraction of the ciliary muscle may ensue, and the child's work is held nearer his eyes so as to relieve the strain of maintained accommodation and to take advantage of the larger, though blurred, image thus obtained. In the Infants' School it may be noticed that at a particular point of fatigue the child makes use of the external ocular muscles and a certain amount of convergence takes place, the child being seen squinting over his work.

### (*b*) *Eyestrain.*

Constant fatigue of the eye naturally leads to eye strain, the commonest manifestation of which is headache. Among the special cases brought before the school doctor by teachers, cases of "headache" rank foremost in number, and parents commonly complain of their child suffering from headache in the evening.

### (*c*) *Hypermetropia.*

Where an error of refraction is not appreciable, eye strain is borne without much difficulty. Very often the child can see the two lowest lines of Snellen's test type and might be passed over as conforming to the necessary standard, but with a history of headache, with or without reddened eyelids, one ought always to be suspicious of eye strain, especially if the headache is relieved by rest. Eyelids slightly reddened, with scaly edges, are an almost sure sign of eye strain, which is often accompanied by frequent blinking and contortions of the face resembling those of St. Vitus's dance. In such cases careful examination after the pupils have been dilated must be made, as in children quite an appreciable degree of hypermetropia may be concealed by the effort of accommodation of the active ciliary muscle. During ordinary medical inspection such cases are missed. Accordingly, statistics relating to the extent of hypermetropia among school children are far from accurate.

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* For testing the vision of infants it is better to use Cohn's "E," as infants cannot always read the letters of Snellen's test type.

That anæmic, debilitated children suffer in greater numbers from defective vision than do children of sound, healthy physique may be frequently observed in any Elementary School. The lowered tone and lessened activity of the ciliary muscle in the anæmic child accounts for the error of refraction being discovered more readily in his case. The debilitated condition of such children and the error of refraction react upon one another in a vicious circle. The lowering of the general "tone" naturally lowers the tone of the ciliary muscle, and the consequent eye strain from maintained effort of accommodation gives rise to headache. Among children few things are more debilitating than constantly recurring headache.

Excessive home work, which always means prolonged near work, is a principal factor, not only in causing eye strain and in increasing errors of refraction, but carried out as it often is under poor conditions of lighting and ventilation, a coincident debilitated condition is produced and the vicious circle is again established.

### DEVELOPMENTAL CONDITIONS: MYOPIA.

During the developmental stage there is a general stretching antero-posteriorly of the eyeball, which in extreme degrees constitutes myopia or short-sightedness. This stretching naturally accompanies every period of growth. Hence myopia appears to increase considerably during school life, and has accordingly been ascribed to school conditions. There seems to be little doubt that where there is a tendency to myopia, it is much accentuated by conditions calling for maintained strain on the eyes; but where such a tendency is not marked, the same strain is borne apparently without difficulty. Still it remains that the incidence of myopia has been increasing in most civilised countries. It is greater in Germany and in Japan than in this country. All three are studious nations, and it may be the German and Japanese types are contributory factors. On the other hand, it is interesting to note that Hermann Cohn, the most extensive and original worker on this subject, after examining the schools in Constantinople, was astonished to find, in spite of appalling conditions of lighting and seating, a total absence of myopia. Cohn did not suggest whether this condition was due to want of hereditary taint or to absence of near work at school.

So-called school myopia is essentially a developmental defect encouraged by debilitated and weakened tissues, and in many cases is of precisely the same nature as spinal curvature and flat-foot occurring in weakly and rapidly growing children. To a certain extent heredity is responsible, but there is no doubt that the prevalence of myopia might be considerably diminished if more attention were paid to the conditions surrounding the growing child. The study of inherited myopia has an exact analogy in the study of insanity. It is becoming more and more accepted by experts in this branch of medicine that if the children of tainted parents can be kept away from upsetting influences there would be fewer actual cases of insanity. In the same way, if at school we cared for the children of myopic parents and adapted the curriculum to their needs, there would be fewer cases of myopia.

### HIGH MYOPIA.

High myopia must now be specially considered, and children suffering from this affection require a special school curriculum where the necessity for near eye work is eliminated. In London these special schools are also utilised for children suffering from such diseases as preclude them ever attaining good vision. The instructions issued to the Head Teachers of such schools are that the use of books, pens, paper, pencils, and slates of any kind is prohibited; and it is explained to the child and to his parents that this is for his own good, and the same instructions must be adhered to at home. He is allowed to write and draw on his blackboard, large free-arm movements only being used. Knitting is taught only by touch, and a large cardboard collar invented by a Head Teacher is worn so that the child while knitting cannot see the work. This precaution is very necessary, because at every opportunity the high myope uses his eyes for near work, whereas the idea of the special school is to discourage near work and to encourage the development of the muscle sense. Boys are taught the larger kinds of carpentry, but the use of the rule and of measured plans is disallowed. At present every place in these Special Schools is occupied, and there is a steady demand for more places.

There is another type of child for whom an "easy system" is recommended. This is the child with marked defect in one eye or moderately defective vision in both eyes. He does not quite come under the Special School category. He is the lame dog to be helped over the stile. For him the use of books with small print or writing other than in a bold, large hand is prohibited. He must not read or write for more than twenty minutes at a time. His education is carried out mostly by means of oral and object lessons and demonstrations.

## PREVENTION AND AMELIORATION.

From the Special Schools we learn a valuable lesson for the ordinary Infant School. The teacher should substitute large objects for small and coarse movements for fine ones. The desire to obtain accuracy in writing or drawing in the first half of school life is quite uneducational, the co-ordinating machinery for the large number of muscles necessary to obtain fine accurate movements developing only in the latter half of school life, and any precocious development being more likely to lead to ultimate nervous defect than otherwise. Pen and pencil writing, picking out small beads or seeds, sewing and threading needles, should be banished from the Infant School, except for children of seven years of age. Reading and writing should be taught from wall charts and blackboards, the latter being especially serviceable in obtaining free-arm movements and developing the muscle sense in writing. Dustless chalk can be procured for this purpose.

The difficulties which teachers experience in getting proper attitudes for near work, in getting a sufficient distance between the eyes and work, and in training children to write without the hands being held in constrained positions, are difficulties which are quite insurmountable during the early years of school life, so that it would be better not to give the children the opportunity of acquiring such faulty habits than to have to make them unlearn them later on.

To prevent eye strain it is important that a sufficient distance be kept between the eyes and the work. For ordinary school work the distance should be between 12 and 15 inches. One of the principal reasons for not teaching reading from books and writing on copy books in the infant department is that this distance cannot be maintained. The average age of the infant is six years and the average height about 110 centimetres. When a child of this size attempts to write, he brings his eyes to within 7½ or 8 inches from his work. It is not until between seven and eight years of age that the child while writing can maintain a distance of even 10 inches, which is still not quite satisfactory.

Copy-books with numerous unnecessary lines should not be permitted in schools, and the type of reading books should be graduated from one-eighth to one-sixteenth of an inch in height according to the age of the children. A convenient rule recommended by Cohn for measuring type is to place on the book a piece of cardboard having a hole a square centimetre in size; and if more than two lines can be seen at once in any part, the type is too small.

The young child's visual memory for letters or words is only in the developmental stage, and he has consequently to examine carefully the contour and shape of each individual letter and the spacing of each individual word. When his visual memory has developed further, the size of type used may be reduced. As soon as there is a general standardisation of types for children's books, and when the use of glazed paper is abolished, the evils of eye fatigue will be considerably lessened.

## Lighting.

Another factor of very considerable importance in the prevention of fatigue and eye strain is the lighting of the school. It is exceedingly difficult to appreciate the fact that the intensity of illumination afforded by ordinary daylight outside is at least a thousand times greater than that in the middle of an ordinary room when measured by the illuminometer. The eye can adapt itself without strain to these great variations in the higher degrees of lighting, but where lesser degrees are concerned, it is much more sensible of the difference, although, as Mr. Percy Waldron, who has given much time to the subject of illumination, points out, "In this matter of defining the lower limits at which it is advisable to supplement daylight by artificial light, the eye is not to be trusted. In the waning light of a winter afternoon the eye will loyally attempt to adapt itself to the more onerous conditions, and will not infrequently induce one to continue reading or writing by daylight long after the time when the assistance of artificial light should be resorted to. By the time the eye finds the strain unbearable, the mischief has been done." This is more especially the case in the younger children where visual memory for words is as yet undeveloped, and the strain consequently greater. Mr. Waldron suggests that the illuminometer, which is easily made use of, should find a place in every school, so that the Head Teacher should be in such a position that he need not rely, in the case of a badly-lighted classroom, entirely on the time of day or upon the degree of light as estimated by the eye. Moreover, he would be in a better position to co-operate intelligently with the authorities on the question of artificial lighting. Years ago in Bradford Dr. Kerr invented a simple form of illuminometer to be used by any teacher with normal vision. It consisted of a piece of cardboard on which was printed a number of black dots, each one millimetre square and one millimetre distant from the other. If these dots are plainly visible at a distance of twenty feet, the illumination at the point where the card is held is satisfactory for school purposes.

Every classroom whose main source of light is from another direction than from the left, is bad. Back lighting is especially bad on account of the child sitting in its own shadow, and also on account of the strain on the teacher produced by the glare, and although proper attention should be paid to the use of reflection from the walls, care must be taken that the child is not seated staring at a highly refractile surface. Dr. Kerr recommends that no part of the classroom should be distant from the window more than one and a half times the height of the window. He also states that it is inadvisable to have classrooms of greater width than twenty-two feet.

When artificial lighting is being used, the actual source of light ought not to be within the range of vision of the child when working. High-angle illumination should be urged. It has been proved that when one is looking at a brightly illuminated test card with no other illumination in sight, if a light is brought from the side within the range of vision visual actuity decreases to a very appreciable degree the nearer the light approaches the line of vision, and the effort to focus accurate details involves extra strain on the ciliary muscle.

Dealing with the distribution of gas or electric lamps, Mr. Bishop Harman says that the ideal distribution of lamps for a schoolroom is to hang the first lamp—a sixteen-candle power lamp with ninety degrees shade—slightly in front of the dual desk and at the extreme left of the first row, the others following it from that point across the width of the room at distances of not more than nine feet and not less than six. This line of lamps serves to light the first and second rows of desks, a second line being hung in the same relation for the second and third rows, and so on. A minimum artificial illumination of two foot candles should be insisted on for each desk.

Nowadays, more attention is being paid to the subject of illumination than was the case a few years ago, as in some comparatively modern schools, lighting has been sacrificed to appearance. Porthole windows may be found in halls, and in one up-to-date school a stone façade runs along outside the windows reaching nearly to the top, and depriving the room of considerably more than half the light it would receive in the ordinary way. This room, it is true, belongs to the teachers, who may be considered by the Authority to require no outside illumination.

## CONCLUSION.

When we realise that, roughly speaking, thirty per cent. of children suffer from some error of refraction and two per cent. from external eye affections, we realise that the teacher's part in preserving the eyesight of the children is no small one. He must avoid all methods of teaching that involve eye fatigue and strain; for a young child is unable to withstand the effort to retain the multitudinous visual and other sensory impressions that surround and are forced upon him every minute of the day without considerable mental and consequent physical fatigue. All children under five, most children under six, and many under seven years of age, require at least an hour's rest during the period of daylight. Proper accommodation for such rest should be found in all schools, but until then many teachers have made shift with what they have, and in their schools the small tables of the babies' room may be seen upside down at the beginning of the afternoon session, and on little hammocks suspended by rings from the legs of the tables the babies may be seen sleeping. The method is by no means ideal, but is infinitely preferable to the old style, which may be seen in most schools, where the child's head falls over on the desk, and he sleeps in an uncomfortable cramped position the sleep of utter exhaustion.

One word in conclusion : The protection of children's eyesight depends largely on school conditions. School conditions, whether we refer to those of lighting or of method, must not merely be adapted to the needs of normal children. In any satisfactory scheme of education we must arrange for an additional margin broad enough to allow for the needs of one third of the children, the subnormal.

# THE "UNCONSCIOUS" MIND IN THE CHILD.

By DR. and MRS. EDER

(London).

Among the many adventures in education which Miss Margaret McMillan has pioneered the latest and most helpful is the Open-air Camp at Deptford, where some fifty to sixty boys and girls are freed from the schoolroom's physical and mental stuffiness.

It was here that we received encouragement from Miss McMillan to proceed with some investigations we have been carrying out elsewhere for some time into the deeper layers of the mind; attempting to bring to life the secret desires, the modes of thinking and the growth of the child's mind.

Our work at Deptford must be regarded as entirely experimental; it has been carried on one afternoon a week during the autumn of 1913 (September to December), but the results, so far as they go, confirm those obtained by ourselves elsewhere and by others in different departments of psycho-analysis. In conducting the work we have been mindful of those concluding sentences in Miss McMillan's "Labour and Childhood": "The first condition of success is that he (the doctor) should not offend one of those little ones. The behaviour of children—that is not a thing to judge in the first place. It is a thing to understand in the first place. To classify according to health is comparatively easy. To classify ability and weakness is not so easy. Each child presents his own problem."

Should we seem to offend some preconceptions, we may ask our listeners themselves to be mindful of this author's next sentence: "As time goes on, some will make strange discoveries. And some, for the sake of comfort, may pull down the blinds."

Strange discoveries have been made in recent years about the psychic life of the child, and there have not been wanting the timid who would pull down the blinds. "But the brave will not pull down the blinds."

Psycho-analysis has shown us that if there is nowhere a breach of continuity between the mind of the child and that of the adult the child must never be regarded as a small adult. The mental system of the child must be respected; it is not to be judged by the adult standard. The temptation to do so seems almost irresistible, for our own childhood is so terribly far away—our amnesia of all our earliest infancy proves how far we are thence removed.

It is to the genius of Professor Freud, a Viennese neurologist, that we owe the method of psycho-analysis. Applied in the first instance for the healing of certain neuroses, later researches brought to light close, unsuspected relationships between the mechanisms of normal and abnormal psychology. It was found that much of that life of the more or less normal being, which has hardly interested psychology, is subject to the same laws and can be explained by the same conceptions which Freud showed to hold good in these nervous conditions. It is a question of degree, not of kind. The slips and errors of our every day life, slips of speech, of writing, equivocation, and so on fall into this category; so do our speech and gestures. A more remarkable similarity and of greater importance in the technical application of this method are our dreams, which have been shown, when properly analysed, to be the very revealer of our inmost self—the royal road to the unconscious.

That conscious self of which, at any given moment, we are aware forms but a part of the mind. More fundamental and more important is the "unconscious." Every mental state is fashioned in the unconscious; here are formed those desires, hopes, loves, fears, which lie at the back of our conscious ideas and performances. A desire so formed may pass into consciousness and become realised or definitely put aside. There is, however, another possibility. That desire may be so far out of harmony with our conscious self that the attempt to seek admission to consciousness is frustrated. In technical language it is said to be *repressed*. But as no mental energy can be lost this desire remains dynamically active in the "unconscious." It is in this activity of unconscious ideas that the clue will be often found to the apparent idiosyncrasies in the obstinacy of a child; the child only gives a conscious explanation as to why it refuses to take an interest in, or is slow at some lesson or other, why it "won't do" or "can't do" certain tasks. Thus a very intelligent child of twelve absolutely refused to learn German, giving as a reason that he did not like the teacher and the lessons were too difficult. Analysis revealed a marked unpleasant affect dating back some years; an incident very painful to a sensitive child had become associated with German.

The "repression" into the unconscious of certain ideas is governed partly by the pressure of the external world—the child's environment, partly by an inner need.

The primitive desires of the child are associated with pleasurable or painful sensations—taste, touch, sight, smell, and hearing. These are connected in the first place with self-preservation. The process of education, of making the child recognise certain social considerations, begins at a very early age; he is early given lessons in regulating the functions of feeding, excretion, and so on. Very early the child is taught to postpone immediate for a prospective pleasure and to relinquish personal desires for social considerations. The child becomes occupied at a much earlier age than has been hitherto recognised with psycho-sexual considerations, under which must be included curiosity about his origin, forms of self-love, speculation about the sexes.

Here again the pressure of education—from within and from without—tends to repress desires or ideas which come to be regarded as "shameful" or "naughty." It is of importance to realise the enormous leaps the child in civilisation must make. In the first five or six years the child under civilisation passes through mental processes which it has taken the human race perhaps a quarter of a million years to travel. Though this has been tardily recognised in the intellectual sphere it has not even begun to be considered in the emotional psycho-sexual sphere. The child is in a condition of constant unstable equilibrium; at any rate, the difficulty of adjustment at each stage is extreme.

This is, of course, no reflection upon the path of civilisation; but it emphasises the necessity for going slowly—too much pressure upon the child too readily becomes repression.

The transmutation of the ego-centric impulses into socially useful activities must be a very gradual process, for nothing in later years at all equals this gigantic step. We must be careful not to demand too great a conformity with adult standards of manners, or "decency" or "sense."

The child who is playing with mud pies or is dabbling about with water is not so employing himself from a mere obstinate love of being "messy"—astounding as it may appear at first sight. This is one of the paths of "sublimation"—the substitution of an exclusive interest with the bodily functions for an interest psychically related therewith; this interest, in turn, will undergo further "sublimation."

Beware of the boy who is clean without endless expostulations and scoldings. We may see here again the mistake of a too early use of tools rather than of hands; at all events, let the tools be only employed when its omission is too distressing to the grown up—as at table; let the children be grubby with their hands in the garden and the playroom.

Regarded from this aspect "handwork" becomes infinitely more important even than the cultivation of the neuter activities. It is the beginning of the *whole process of sublimation*, and on its success depends the whole future balance of character and conduct. It is not a matter of indifference, as is too readily assumed, what kind of handwork is chosen. It should not be one term basket weaving and another term stencilling for the whole class. The choice of handwork is determined by the forms of sublimation based upon unconscious associations individual to that child; individualisation is more essential at this than at any later stages of the child's career.

It is only by very gradually substituting other activities for primitive instincts that we avoid the danger of violent repression. Violent repression from without never succeeds in subduing or abolishing the instinct; it simply drives it within, sowing the seed of future neurosis or of outbreaks of anti-social conduct during later life.

It must be our task to smooth this difficult path for the child and to assist it in following his own road to social life. Freud says: "What is to-day an inner obstacle was once purely external, imposed by the need of the time; and what to-day is a demand from without imposed by our civilisation on every young creature will one day become a simple internal suppression." Our practical difficulty in education is that children are at different stages in that process whereby internal conviction has become substituted for external pressure. It is not a matter of class, it is a matter of individuals.

The attachment of the child to his mother, father, family, is riveted in a thousand links—every sense, every physical or mental stimuli have been here aroused. Just as the infant must be gradually weaned from the mother's breast, so must the developing individual gradually become severed from the powerful psychical bonds of the family till, reaching full adult life, he stands alone, replanting himself afresh. We have never fully understood the struggle this involves at every new adjustment; psycho-analysis leaves us no longer in doubt here. For instance, the child's daily going to school, which we take as a matter of course, involves in almost every case some internal sublimation the wider social world of school is a hard cold substitute for the tiny snug nest of the family, while in ultra-sensitive dispositions this adjustment becomes too difficult. We have had one or two instances when a child has not been able to profit by the camp life because the love between child and mother had become a neurosis. A boy of twelve, whom we had recommended for the camp, was unable, on this account, to remain there. He could not bear to be away, he told us, unless he received a letter every day from his mother—he ever feared something might happen to his mother. The child realised as well as any of you here would that the fear was ridiculous. We mention it in order to show that as the fear lies deeper than reason it could not be possibly assuaged by any process of reasoning. The child has other symptoms, a nervous tic, and he is now under treatment. It is not necessary to give here a fuller explanation of this child's condition. It is probably analysis has but just convenient, a rather severe mother complex. The "tic" is quite symptomatic.

Fidgetty habits, such as nailbiting, gestures, tics, are invariably the expression of emotional preoccupations; they are to be regarded as an archaic language. Too direct suppression of these habits is to be deprecated; this may simply lead to some less desirable substitute. These cases require, if bad enough, a searching analysis, and generally lead much deeper than is suspected.

The opposition to discipline or work may be a consequence of going too fast, the child pointing out as emphatically as possible that too great a demand is being made upon its power of adjustment. In other cases it may be the expression of a mental conflict between inner desire and the external world as typified by the school world. A girl aged twelve seemed to get duller, became slacker and more shambling; the child grew worse after every brisk, tonic, admirable gymnastic lesson. Such psycho-analysis of the child's dreams as was possible, the fairy tales she remembered, the word association tests to which she was put, showed clearly the nature of the conflict. The child had no parents, but she was living with her aunt, a very kind woman but the reverse of demonstrative. Puberty was just awakening mentally in the child; unconsciously she was hungering for love and admiration, whilst she got no love and was submitted to a criticism to which she was, no doubt, unduly sensitive. The result was that her whole energy was expended in dreams and day reveries of that ideal affection for which she was pining. Every "brisk" and critical attack from the outside world hurt her and drove her back further and further "into herself" and her dreaming.

There is much talk just now of giving sexual enlightenment in the schools, and, as is unfortunately too often the case, the question has been discussed almost entirely from the intellectualist point of view, and the seeming needs of the child have been measured by the standard of the adult. It is right and proper for the grown up to regard the body with reverence and dignity, to dislike coarseness and jests about the bodily functions. But the child is groping his way painfully, amid trial and error, to this point of view. It is of fundamental importance to realise that sexual life does not come into us full-blown at puberty—it is a slow growth and perhaps the rudiments are to be discovered in quite early infancy. All through early childhood there is an immense preoccupation with birth, the differences between and the relations of the sexes, the bodily functions, and so on. Dreams have shown us this preoccupation in the childhood of the individual just as the myths and fairy tales of birth have revealed this preoccupation in the childhood of the peoples.

The child feels ashamed or guilty of this knowledge—a feeling which may lead to apparent dulness, stammering, or other manifestation of mental conflict. A boy of ten and a half at the camp told one of us that his mother had just had a baby, and that the nurse had brought it in a bag. He had seen the nurse take the baby out of the bag. A week or two later analysis of a dream revealed the complete knowledge the boy had of the facts of birth, and his hopes his mother and father were not going to have any more babes.

Night-terrors in children are commonly due to repression and conflict. As proof that the range of civilisation does not vary in fundamentals between the so-called upper and lower classes, we may mention that we have collected exactly the same dream with the same meaning, from children of the same age of both classes. A very widespread type is a dream associated with fear of burglars coming into the house and stealing the money or clothes—in one case the brass water taps. Dreams serve to reveal discrepancies between the conscious ideas and the unconscious. Thus one boy, to all appearances very fond of his brother, has had two dreams, which, when analysed, show him revengeful towards his elder brother—once he, the younger child, killed his brother and another time broke his leg.

These few instances must serve to illustrate our text that it is dangerous or silly to ask the child, in matters of sex just as in other matters, to have the adult's emotional point of view. We do not doubt that the investigations now proceeding in so many directions into the child's unconscious mind from the earliest age will give us presently a firmer basis upon which to base sexual instruction assimilable by the child. The books and methods of instruction, of which we have seen a large number, can and do only present this information as the well-meaning adult wishes the child might want to have it. The strain upon the child is comparable with that entailed upon the tiny child in the first flush of compulsory education who was asked in the kindest spirit to read, write, cypher, and do fine needlework. (This does not, of course, apply to the adolescent.) A famous psychologist, than whom no man has a higher standard of life's dignity, said to us: "I am not too decent with my children."

Now, this is far from implying that children are not to be guarded from adventitious sexual stimuli. Here we have an instance of the great value of the Deptford Camp—every child has a separate bed and is spared much else that does not belong to the normal and healthy development of sex knowledge in the child.

The open-air school has some other advantages which we must briefly summarise. All forms of activity are, as we said at the beginning, the right path of sublimation. Here in the camp the children are always in movement; they run from lesson to lesson; the lessons are short, and then handicrafts form an integral part of the curriculum. The *natural activities* of the children are engaged; they get water, they put up their beds and take them down, they do a great deal of digging and gardening all these are the homely, primitive crafts. The children show a healthy desire to be messy and dirty—a desire that is, of course, not encouraged by the teachers. But the children always have to be told to wash, which we regard as a good sign, although we cannot, of course, expect everyone to rise to our standard of dirt. Again, of the utmost importance, the classes are small, so that the child is studied as an individual. Lastly, there is a wholesome admixture of sex and age; in this way the mothering instincts and the instinct to be mothered, the protecting instinct and the instinct to be protected, receive their due allowance. (This must not be regarded as a plea for co-education as generally understood.)

Our work is purely experimental, and we are not asking for any changes in any other school's curriculum. What we are rather asking for is a change of attitude. We do ask that regard be paid to these immense, all-absorbing preoccupations of child life; that we do not repress all this by superimposing an "intellectual education." We would point out, in the interests of that intellectual education itself, how urgently necessary it is to see that the pre-existing emotional content of the mind is linked by chains of self-made associations to each new idea presented. This is the work of time and individual assimilation. School howlers, so commonly regarded in a humorous light, appear to us in the light of these investigations to be the tragic evidence of a non-assimilation which will presently be shown in a complete failure of adaptation. These unconscious dynamically active factors are to be looked upon as the foundation upon which education is to be raised—none are to be repressed—but all to be canalised and gradually made to subserve the requirements of our civilisation.

## PSYCHOLOGICAL TESTS.

By Mr. CYRIL BURT.

A psychological laboratory working in connection with an education department has a two-fold function: the study of individuals and the study of methods.

From time to time new methods of teaching and new modes of organisation are introduced into schools. Some of these reforms are advocated as of universal applicability. Of this nature are the newer methods of teaching reading, the recent extensions of certain forms of handwork, the various alterations continually suggested in the length, in the sequence, and in the correlation of the various lessons, the various alterations continually suggested in the age at which a child should learn to read, to write, and to practice the simple rules of arithmetic. Other proposals are of a more limited applicability: they are designed to meet particular problems arising in special cases and in special places; of this nature are the playground classes for children whose educability is impaired by a delicate constitution, and the sleeping classes for children whose sleep at night is abbreviated or marred by the conditions of their home life. Whether of narrow or of wide applicability, whether they relate to educational procedure or to school organisation, all such innovations of method are commonly tried for a while and then dropped for ever. They leave their mark, it is true, upon those who have experimented with them; and, if well advertised, may even lead to a modification of method upon a larger scale. But, as a rule, they are taken up without any thorough analysis of the difficulties they are expected to solve; and are withdrawn without any collection of trustworthy evidence as to their value or their defects.

Here, then, in the first place, the psychologist's technique may be of use to the educationist. Consider the vast amount of money, time, and energy spent on trying and discussing the Montessori methods; and contrast the small amount of reliable knowledge about the efficacy of these methods to which these experiments or discussions have led. On the other hand, consider the extremely small amount of energy, time, and money which have as yet been spent upon scientific investigations into the transfer of improvement; and contrast once more the revolution, recently effected by these simple studies, in our views as to the way in which one form of training influences another. There is but one inference. An educational experiment which is not scientifically planned may be misleading and must be wasteful. A very small increase of the initial outlay, a very small addition of time and thought, a careful prearrangement of the children, teachers, and controls, who are to take part in the experiment,—these might convert an inconclusive innovation into a scientific research; and might, in the long run, effect a vast economy of public money, of private enthusiasm, of teachers' energy, and of children's time.

There is, however, one item which all such investigations necessarily presuppose. This is a means of measuring mental performances before and after the change of method. In short, our prime need is a system of mental tests.

On turning from the study of special methods to the study of special individuals, the need for a system of mental tests becomes more obvious still. Take a random group of children; and arrange them in respect of a given mental quality, say, general intelligence. We know that a considerable proportion of the group, perhaps about 50 per cent., will approximate to the same level or type; a smaller proportion, perhaps, about 20 per cent., will be distinctly above this level; and about an equal proportion distinctly below it. Extreme deviations from the general mode will be extremely rare, probably under 5 per cent. either way. Two obvious inferences are suggested: First, that if care be taken to select a homogeneous group, a large class can be taught together much more successfully than if it includes the few extreme deviations which chance is sure to throw in; secondly, that, whether they be subnormal or supernormal, the children who require a more individual form of instruction, given in classes which contain comparatively few in number, are themselves comparatively few. The problem of successful teaching on a large scale thus becomes very largely one of selection. Once more, the only certain means of discovering the unusual individuals and determining their needs is by means of scientific tests.

For the sub-normal, many education authorities have already provided special schools. There remains, however, the difficulty of diagnosis. None, least of all teachers or school medical officers, will claim that the methods at present available are at all satisfactory. A reference to a report on the procedure followed in the examination of mentally defective children (*Annual Report of the British Association*, 1911, p. 177, *seq.*) shows how various are the methods, the standards, and the results in different parts of the country.

Even more unsatisfactory are the means available for dealing with the supernormal. In the top standard of almost every school there are children of ten or eleven, who will wait there year after year until they are fourteen. In the remaining schools the progress of the more forward children is deliberately retarded. Here is a source of national wealth and well-being, existing in its most valuable form, yet lying idle and deteriorating. Scholarships by no means abolish the problem. For it cannot be pretended that the scholarship system is completely successful, either in selecting those supernormal children who need a special education, or in providing them, when selected, with the special education they need, or even in enabling them in the majority of cases to avail themselves of the opportunities which already exist. We must, therefore, do for the supernormal what we have already commenced to do for the subnormal. It is, indeed, to our credit as philanthropists, though not quite so much as men of business, that we have begun with the feeble-minded first. The special and costly provision made for the defective and the backward is undoubtedly to be defended upon the high ground of its humanity. But the expenditure of an equal sum upon the gifted and the forward, the provision of special teachers, special curricula, special schools, and specially small classes for the supernormal this, I think could be justified as one of the most remunerative investments that could be made on behalf of the community.

But here, again, it would scarcely be prudent to embark upon such a scheme before we had procured a reliable method of discovering our supernormals. Once more we are confronted with the need for a system of mental tests.

There is but one system of mental tests which has hitherto had any claim to meet these requirements. This is the scheme associated with the name of the late M. Binet, of Paris. In America his set of tests has had a great vogue. In studying the merits of educational methods, still more in studying the needs of individuals—in the institutions for the feeble-minded, in colonies for the epileptic, in courts for juvenile delinquents, in normal schools of various kinds, these tests have been applied upon an extensive scale. In this country they have recently been adopted by many teachers and by many school medical officers; they have even appeared in the regulations of the Board of Education. There can be no doubt that the use of these tests is a great advance upon a mere reliance upon subjective impressions and physical signs. Yet, because of their very plausibility, there is a great tendency to ignore the tentative character of Binet's scheme. It is, I think, most important that its patent defects and inadequacies should be remembered and removed. In my judgment, the Binet scale as such has not come to stay. It is a stopgap. While we avail ourselves of it as the best temporary expedient that lies to hand, we must not omit to construct a more elaborate and more complete system. We need several scales, not one. We need a scale to measure inborn capacities, such as intelligence or memory; we need a scale to measure acquired capacities, such as knowledge of arithmetic or ability to write. We need to measure these abilities in terms of their own units, not in terms of years or fractions of a year. We need to discover norms or standards of ability and attainment for every school age, for each sex, for different races, districts, and social classes. We need to lay down the limits of normal variation; and to determine the kinds and degrees of abnormality above or below these limits. Then, and only then, shall we be able to study with scientific precision the individuals we have to educate and the methods we use to educate them.

Meanwhile, the preliminary work must itself be done in schools. It will demand the generous aid of all who are experts upon the various aspects of child life. Co-operation is imperative. Teacher, inspector, medical officer, social worker, psychologist, administrator—the work of every specialist is essential; and must, if this end is to be achieved, be contributed, co-ordinated, and organised.

discrimination, sustained attention [illegible]
from the grand [illegible] [illegible] taken from

# MONTESSORI SYSTEM.

Mme Montessori is [illegible] [illegible] [illegible]

Summary of a Paper to be read at
THE NORTH OF ENGLAND EDUCATION CONFERENCE,
BRADFORD.
On Friday, January 2nd, 1914.

## THE TEACHING OF MADAME MONTESSORI.

By PROFESSOR J. J. FINDLAY.
(University of Manchester.)

I.—Outline of the principles. As Professor Culverwell has shown, this work should not be treated as a rigid method, but as illustrative of the force of large principles of child nature.

a.—*Freedom.*—The child to have choice among the toys provided: and to be allowed his own time for solving the problem which the toy presents. Thus freedom here means both individual occupation as opposed to joining others in a class, and freedom from unnecessary interference by teacher or other elder folk.

b.—*Selection of Pursuits for Infants.*—To give play for the senses: to give intellectual interest, *i.e.*, to provide problems for solution. Justification for devising special toys, for using eye-covers. Advantage to the inventor of long experience with backward children.

c.—Brief reference to the Montessori treatment of reading and writing.

d.—The development of power of attention. The teacher's purpose should be to train the child to self-control by supplying occupations which absorb attention for an extended period. Thus habits are formed which overcome tendencies to distraction and enable the scholar to render obedience to school routine when a little older.

II.—Account of the investigation conducted at the Fielden School. The teachers had no prepossession or enthusiasm on behalf of the system: we introduced several modifications, for we do not believe that the details appropriate to Italian children can be transferred to England.

But the conclusion was quite favourable as confirming the validity of the principles.

III.—The place of Educative Toys in the Infant School curriculum: they do not cover the entire needs of the child. He wishes to "play" and for this the Montessori scheme affords no scope: also to sing and dance, in concert with his fellows.

IV.—*Suggestions to Teachers.* (1) In Infant Schools. Make, or rather get older boys and girls in your school to make, some of the simpler apparatus and try that with a few infants first of all. (2) Other teachers should read the Montessori literature as a stimulus and as an explanation of important features of child-nature.

*References.*—Culverwell: The Montessori Method. (G. Bell and Sons, 3s. 6d.) Miss Steel and J. J. Findlay: Educative Toys (Fielden School). (Blackie and Son, 1s.) Mrs. Fisher: A Montessori Mother. (Constable, 4s. 6d.)

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A Paper to be read at
THE NORTH OF ENGLAND EDUCATION CONFERENCE,
BRADFORD.
On Friday, January 2nd, 1914.

## THE MONTESSORI SYSTEM.

By Miss WOUTRINA AGATHA BONE.
(University of Sheffield).

Before we consider the system and apparatus we will look at the school itself as we see it through the founder's book and through the accounts of visitors. It promises much.

There is a children's house set in the midst of the parents' and children's homes—a room where the mothers going to and fro from work may look in at the window and see what their little ones are doing—a place where the children are able freely to carry their little chairs and occupations wherever they will. The low cupboards and washbasins, the little stairways and fences are meant for little people to use. A sympathetic woman has stooped to the eye level and arm reach of these children, and planned for them a house in which they can be really comfortably at home. There is an open door, so that they can go and come as they please. And here, too, lives the directress, one who is ready to learn from her children, who is alive to the danger of stifling the inner power and quenching the smoking flax. She knows how to watch, and has reaped the reward of waiting. She is leisure-hearted, always ready to help, and always able to refrain. The child is not merely a scholar to her, he is a member of a family, for she knows his home and parents—she has carefully noted down his measures as to height, weight, etc., for his body will tell her much. The child, too, helps her, as he gives little pictures of his home in the morning talk. The inspection of clothes and hands follows; and here, probably, the same happy results are to be seen as in the Free Kindergarten in Cannongate, Edinburgh, to mention one of the many British attempts in the same directions. The children gradually grow a feeling for cleanliness. A small Scotch boy when asked, "How do you know God is beautiful?" readily gave the answer, "Because He keeps Hissel' clean."

There is no detailed time-table on the wall, only a general plan, for there is always time for each child to help himself. He may work for as long or as short a time as he pleases, he can follow the interest of the moment, until he becomes engrossed in the pursuit for an hour. There is plenty to be done, things to fix together and take apart, pegs to fit in holes, and bricks to pile on one another. There is the beautiful game of silence to be played. *There is no need to hurry.* It is a reassuring note to hear in the twentieth century. The children begin to set the twelve o'clock lunch table soon after eleven, so that there should be plenty of time to do it properly without flurry and fear.

Now let us examine the apparatus, not with the eyes of the adult, the specialist, but with the eyes and fingers of the children who come in to play with it through the long hours of the day. Francis Thompson reminds us what it is to be a child: "It is to be so little that the elves can reach to whisper in your ear . . . it is to turn pumpkins into coaches, and mice into horses, lowness into loftiness, and nothing into everything, for each child has a fairy godmother in its soul; it is to live in a nutshell, and count yourself the king of infinite space." Has

Madame Montessori remembered the *fairy godmother?* Assuredly she will appear! This is the great age of free, unfettered imagination. Shall we find things dear to the heart of our own nursery children? Empty cotton reels, little easily-drawn about waggons to be loaded and emptied, dusters tied in knots, bricks, soft balls, old empty boxes, and clothes pegs? The nursery child of four and his six-year-old brother rejoice in sand and garden stones, and sticks, cushions, and hassocks. There is the toy ship with the dolly at the helm, the dolly who comes alive, and here in the treasure box of R. L. Stevenson's little playmate are more things revealed—a handful of nuts carefully gathered in autumn and stored—a whistle made by nurse herself—a white and yellow stone, carried laboriously home because it looks like and therefore *must* be gold, a chisel—a *real* chisel made by a *real* carpenter. The Playing Child, so engrossed with the affairs of Fairyland, is equally enchanted with the Real in the grown-up world. The Doll—"the fourth order of humanity"—is here, too. Are these stored in the low cupboards? It is just here that one of our disappointments comes.

To many of us who have gravely counted from *one* to *six* to mark the orderly opening of Froebel gift-boxes and striven to make a logical order of buildings—following on the classic—a throne, a garden-seat, two seats, a castle, another castle, a wall, etc.—given by Goldammer and our faithful trainers—to us who have since joyfully emptied the gift blocks in generous heaps of building material, and seen the little builders help themselves freely as their need dictates, the apparatus in the Montessori schools looks forbidding . . . We found that it did not make our child logically minded to work laboriously over the Froebel drawings of straight lines on chequer paper, in arrangements resembling triangles, with their contrasts and intermediates or reconciliations—that it did not make him thrifty in general because he was forced to find some use for the eighth cube of his gift, even though the building did not need it. We found that it was in so far as things were remote from his daily life and nursery practice that they were meaningless and never entered his life fruitfully at all. We found that it was in warmer, human situations that our nursery child learnt that which became of real value. The tidiness inculcated by the gift buildings did *not* result in the generally tidy child—*that* was part of the ceremonial of the school's apparatus. But through play with toys, though doll play, the necessity of order and tidiness soon made itself felt. The doll could not go out if her warm coat was mislaid. The little mother could help nurse by clearing up the nursery. We began to find that it was in simple nursery situations, intimately bound up with play, that our little child found real help for the future.

We must hear if the Bambini, of the Homes of Childhood, more readily see and seize the opportunities of buttoning their own and others' shoes and pinafores before we can judge of the value of the dressing games. It is only in so far as these powers are applied to real situations that the value of them can be measured. Need we strip the activity of its situation so constantly? Children do not always make the connection. We hear the quick response, "But *that's* only sums!" or, "We only do that in mental arithmetic!" when they are reminded, on bringing home the wrong change, "that they have learnt that at school!" The other day a little boy was asked to give a problem in addition of money similar to those his teacher had given him. It ran: "If I bought a pound of butter and a loaf of bread—then—I could have bread and butter for my tea!"

Professor Culverwell, in his book on the Montessori Principles and Practice, compares the preliminary preparations for reading and writing to the modern mode of teaching to swim—which consists of deliberately practising each movement on dry land. "Not until he becomes expert in this is he put into the water. The result is that he begins to swim quite easily." But the would-be swimmer has the purpose fully before him, he is working to some near and *appreciated* goal. The nursery child has no such purpose; he has no idea of the significance of reading and writing, he plays at writing, copying the external details, putting pencil to paper and scribbling in lines—he is fully satisfied with that. The normal child learns to read directly he is impressed with the need and value *to himself*. Is it really necessary to give such a careful, synthetic preparation in the precious days of baby and early childhood—for these activities, which in the ordinary course of things will at the right time excite their *own* interest, because the need and significance presses upon the learner?

What purpose does this apparatus serve?

It is an elaborate scheme for definite sense training—we know the danger of over-specialisation. Can we entertain the idea of carefully training one sense in isolation? We do not enter into life's experience like that. "Things do not come pigeonholed."

Line upon line, precept upon precept, is not the way life teaches—it is a grown-up person's arrangement. We must not return to the days of the pothook. Things are apprehended as vague wholes, growing clearer through familiarity, through analysis.

Our nursery child takes of life freely, his vitality flows into that which he touches, his fancy plays about it, he is ready in quick adaptation of environment to his need of the moment. Are these characteristics being made use of by the apparatus? Surely Madame Montessori has not been into our nurseries and seen our normal healthy nursery child, for this apparatus is not worthy of him; *he can do more* in an environment which provides liberally of less graded and formal stock. This does not call forth intelligent questions or interested talk, it makes no appeal to imitative and imaginative power, it does not foster neighbourliness. It makes little appeal to curiosity, that rootlet of intellectual interest—for what is there to explore? Even the six pillars graded in weight will not open, and the child's right to be active is very shabbily met when he deals with the coloured fabrics—there is nothing to *do* with them, but to feel, to guess, to put back. Our nursery child would like to cut, and wind, and make up the doll's bed, with the sheet and woolly blanket, and a shiny satin cover on the top. But these things have to be put away again at once. They are *never* more than bits of fabric. They are *never more* than pegs in holes or strings on cloth stretched on frames.

Our nursery child is living in the great age of Imitation and Imagination; he is playing out to himself the experiences of others; he is learning what it feels like to . . . there must be ample time in his long day for the dramatic plays which will help, through Imitation, to make his own life clearer to him.

Moreover, as he stretches his hands out to take these things, he cries, "Give it me, and I will make more of it. . . That is the child's word always." It is the voice of the fairy godmother really. Mr. Barrie reminds us that it is the "stick boat" which is really the "sweetest craft that ever sailed on the Round Pond. She is rather like a stick until she is in the water, and you are holding the string."

One longs to call to these children working over the apparatus continually—

"Oh, how much wiser you would be
To play at Indian wars with me!"

Will the apparatus really satisfy this little child? Here is an account of the reception by the nursery children I know.

They welcomed the apparatus gladly, and played with the pegs and bars happily as a game, for a short time; but there was no readiness to continue this, until one boy caught sight of all the brown pegs standing together on the table, then he called out, "Them is ginger beers!" And so they were, for nearly an hour another type of game was delightfully played—shops and ginger-beer bottles. Moreover, a toy tramcar came into requisition, and now it was very important indeed that the largest ginger beer should be heaved on top, and the smallest packed under the seat; a very careful measuring of sizes took place, dependent on the size of the toy tram. The whole situation was alive—full of interest—quick adaptation of means to ends, fun, and chatter, a warm human interest enlivened.

The six cylinders which rattle when shaken, were taken, but disappointment followed, when it was seen that all one could do was to put them in a row according to weight. What was inside? What made them rattle? Ah! we might not open them; they are not made to explore; we can never find out what makes them rattle until we break them. So unless the children were allowed to use them as rollers and pillars, they took them sadly back.

The apparatus was called by the children just "them things" until they were allowed to play freely with them; then names were instantly coined, and "them rattles," and "ginger beers" kept the players busily working and creations arose full of real vitality and promise.

But we are right outside the apparatus now, and far less elaborate material will do. Moreover, this is not the purpose for which the Montessori apparatus has been made. It is the barrenness of this formal apparatus that appals; the nursery child hardly asks a question over it, yet one of the most healthful signs of normal development is that questioning and chatter with which our little ones besiege us.

It is true that the three-year-old child is delighted with a mechanical exercise, as the play over the strap and knob in the railway carriage shows us. For this we may welcome the apparatus, let there be some of these pegs and holes conveniently to his hand; but he goes much further—the fairy godmother must be reckoned with—and cylinders become "them rattles" or "ginger beers," the spools of coloured thread and the cards are commandeered for house building. "I will make more of it." Yet this is not the reception Madame Montessori intends.

It is said that the use of the apparatus is, after all, but a small part of the Montessori School activities, but we do not gather so from the book; almost all the illustrations are concerned with it. In the accounts I have seen, written up to midsummer of this year, dramatic and social plays, toys, story telling, and dancing were not mentioned. The directress tells very few stories, and it is interesting to hear that Madame Montessori's experience in this respect is like that of many teachers of poor children in slum districts. There is so little experience to appeal to that the shortest story fails to hold the attention. But unlike

Madame Montessori, most of our story tellers are not content to leave it there. The Nursery Rhymes and picture books open doors, and soon these children have a little company of new friends. There are no picture books in the Montessori School, and yet in them the tale of the year is told again.

"We may see how all things are,
Seas and cities, near and far,
And the flying fairies' looks
In the picture story books."

The child with the picture story book in his hand and the fairy godmother in his soul starts well on the journey through life.

Mrs. Mumford in her valuable book, "The Dawn of Character," joins Madame Montessori in the warning: "If emotion is allowed to run waste in the realms of imagination, not strength of feeling but sentimentalism is the result." But she does not relinquish story telling on that account. "Emotion must needs be trained to bear fruit in definite acts of morality," and the companions of little children often find the way. Is it not, indeed, just here that the adult may so well help?

There seems a very real danger in the overbalance of minute, isolated, sense training, against the minimum of story telling, of play, and happy dancing and singing.

We shall be considering the principle of freedom later in this paper, and it will be well to remind ourselves here, that "free men and women are those who are not imprisoned in their own thoughts. A man may live in hell, and have his mind in heaven." Sense experience may well form the prison walls. We dare not depend on the evidence of the senses for the release of the spirit. In order to be set free from the prison of our own thoughts it is necessary to *understand*—to have that warm human insight which makes it possible to enter into other's thoughts and experiences. This can only be if our own are gradually becoming clear to us. Is it not by reading, talking, playing, working, living fully with others that this clearness comes? The neighbour may help to set the spirit free. But this is not enough. The illumination which Imaginative power brings must enlighten the whole. In "The Truants," Mr. Benson makes one of his people say, "You will understand now."—"Why now?" "Because lately imagination has come to you. Imagination—the best of all the gifts the gods have in their treasure stores."

The books and poems we cherish in memory, the melodies and rhythms which swing through the common day's doings, the sound of falling rain on leaves, the sudden use of a familiar word in a new connection, giving it richer meaning, the great illumination when the separate subjects as we knew them ran together at Infinity, joy in the life of growing things under the wide sky, these are open windows through which we escape from our prisons; it is Imagination that gives us the Vision.

Our Nursery child must be aware of these windows, through which the light streams and beckons; he needs them even now—in childhood—for "man does not live by bread alone."

To the knowledge gained by dealing with things must be added Imaginative power to lift no nearer the vision. "Imagination runs riot, goes to seed, flags for lack of knowledge." "Knowledge is the soil by which the flower of imagination is nourished." That man is spiritually free to whom "the hill implies the vale beyond, with that vale's history." That man is still in prison who can only tell its name and height, and the stuff of which it is made.

It may be good to become clearer about the world through learning by practice to distinguish different tones of colour, but it is better still to become clearer as to the experiences of ourselves and our neighbours though hearing about them in stories and playing them, to "see how it feels."

It is good to help the eye to see clearly, but there is that "inward eye" which the memory of dancing daffodils can gladden. It is well to distinguish the direction of the sound and its duration, its intensity and pitch, but it is better still to have wholehearted joy in the song.

If we look too exclusively at our colours in their nicely graded sections, in isolation from life, we are hardly likely to rejoice "in that light that never was on sea or land," which glows and flashes out continually in our normal nurseries.

Is the use of this apparatus which overbalances dramatic play and stories really capable of building up the associations which make for true riches of soul and spirit?

The question for common sense is always, "What is it good for?" and Lowell reminds us that that is a question which "would abolish the rose and be answered triumphantly by the cabbage." Let us keep and cherish the rose!

Let us now come to some of the principles hinted at already, which underlie the method.

Freedom. The underlying principle is that of auto-education—the child is to help himself; he is as soon as possible to become independent of the adult. To be free we must be independent, and so the adult's function is not to help, but to watch, to "send a ray of light and pass on the way," to be there in case of need, to show how, but not to do for the child what he can do, however feebly, for himself. Here we shall all be probably in hearty agreement. Every time we do something for our nursery child that he can do for himself we are robbing him of an opportunity of growing stronger. It is one of the hardest duties of the school day—to take cloakroom work; to stand by and let the little one struggle with his bootlace, to watch him tidy his desk or bench; yet, it is only by so disciplining ourselves in this direction that we can hope to be of real service to the child.

But we must be clearer as to the use of this much misunderstood "Freedom." Freedom is not doing as you like, either in the Montessori method or in our own sense. It is used in the liberal sense of "Ye shall know the Truth, and the Truth shall make you free." Freedom can only appear when the "Thou shalt" of the law becomes the "I will" of the doer, the second on an immeasurably higher plane than "doing what you like."

So long as the individual alone is concerned there is no "Thou shalt," "Thou shalt not." It is the presence of the neighbour that creates the necessity for law.

In the Montessori School the child is free to choose his toy, his occupation with the apparatus—the cylinders set in bars, the buttoning frame, the graded colour tablets; he is moreover free to play with these for as long or as short a time as he likes. There are no set hours. He is free so long as he does not annoy his neighbour. But should not the apparatus give scope, so that it helps him at five years old to become aware of his neighbour? For this apparatus offers little, if any, scope for neighbourliness. Each piece is self-contained. Almost all the children work alone, and although at three years old this is natural enough, the nursery child is growing through his three-year-old self-centred non-social play on towards his six-year-old social play our nursery toys should help, not hinder him in this important growth. In life, as we know it, we must become aware of our neighbour. And there is also an adult neighbour to consider. Is the child, by right of his childhood, by the fumbling experiments on his unaided part, to upset the regularity and convenience of the adult household? Is there not an adult right, too, to consider? After all our nursery child finds himself in a grown-up world, with

"Great big people, perched on chairs,
Stitching tucks and mending tears."

People who "sit at home, and talk and sing, and do not play at anything." Pandora lost for all the children for ever after her that first Paradise of Childhood, where grown-ups were unknown; children only find it again in dreams, and when they wake they are very content to find us with them again. Let us take things as they are. Let us try to reconcile the child's right and the adult's right. It is interesting to read Madame Montessori's reconciliation here. The child has to note the difference between good and evil, but "he must not confound good with immobility, and evil with activity," and here is an American Montessori mother's reflection: "When we return after a brief absence and inquire of a little child, 'Have you been a good child?' Do we not mean simply 'Have you been as little inconvenient as possible to your elders.' . . . The child is often considered 'naughty' if he interferes with adult occupations which, going on all about him, all the time, and being entirely incomprehensible to him, are very difficult to avoid. . . . He is good . . . according to the degree of his silent passivity."

The balance between the child's and the adult's right must be adjusted by ourselves for ourselves. No system or method will yield us the enlightenment and comfort that common sense and a sense of humour shed upon the problem. It is so hard to be simple; to learn not to rely on uniform procedure; to let our real best selves meet the situation as it comes; that—and the reflection upon the day's doings—seen in the light of a working knowledge of child nature in general, and of our child in particular, ought to help us in this matter of adjustment. It is a question of personality—not of system.

Inconsistency is often a sign of vitality and growth, and this is felt continually in the book of method. There is one particularly interesting illustration. The note, "There is no need to hurry"—is forgotten in the haste to prepare for reading and writing. Children of three and four can read and write! Before they are aware of the social need, they are equipped. A tool is put into their hands which they do not know how to use; the operations are meaningless to them. This is a dangerous experiment. The term comes several times in the book—"These little men and women," but is this what we are really aiming at in the training of our nursery children? In these schools children are rapidly becoming sense specialists. The ideal before them is an adult one. Many choicest buds of promise are neglected, while the early blossom seems often rapidly developed into fruit out of season. We are concerned with nursery children, not with "little men and women."

There is one great fact eternally, silently, insistent throughout the march of humanity upward. It is the necessity of making haste slowly. Countless ages have gone to the making of man, and he has not yet been made perfect, and when one generation gets thus far, there is an apparent backward sweep.

as after nine months of hidden, quiet building, the little child comes helpless, with only the capacity to react to the field of pleasure and pain to help him carry on the march. "All things come to him who knows how to wait." It is leisure-heartedness we need. Some of us are busy over much. In our anxiety to do our best for our children, to leave no stone unturned, we rid ourselves of one of the great essentials which the companion of little children must always have, leisure-heartedness. Time to read, to think, to walk, to wait, to dream, to play, to be a child again; these should form the "golden fringe of the practice of serious labour."

The Montessori schools show a curious contradiction; in spirit there is the "great calm trust in life," in manner, the reposeful quietness of the directress, in practice, in respect to the treatment of mistakes; but in the bolder outline of curriculum we lose the nursery child in the hurry to present a sense specialist, a reader and writer, a little man or woman.

Has not this school also a distorted interpretation of—"there is no need to hurry" when we see it in operation over mistakes the children make. A wrong word used—the name of a colour—red given as blue. The teacher does not correct, she merely smiles and puts the box away, this is after a direct lesson on the naming of colours. "The child is not ready—we must wait," is her argument. "The child must be unaware that he has made a mistake. If he is corrected, he grows discouraged." It may be that the experience in connection with defective children has led to this fear of discouraging. Special teachers often find that if they betray impatience in tone or look, however slightly, no more can be done with the child that day. But is our nursery child as easily cast down? Does not life teach, and shall we not all learn—the sooner the better—that a mistake is not necessarily a sin. It is a very old and true saying that "failure is often the high road to success"; shall we bar our nursery child's way along this common path, worn hard by the experience of the race, just because *tears* lie along it. Laughter lies there too, and finer things still; it is because we tread this path in verity that we sometimes catch a nobler meaning, that we are sometimes thrilled by the beauty and glory of ultimate achievement.

*Is it not wise to realise that an intelligent failure is more hopeful for the future than an unintelligent success?*

All these considerations lie about the principle of auto-education. I will focus this part of my paper by the help of Mother Carey. Tom went to see her "and as she is responsible for making old beasts into new all the year round," he expected to find her very busy. "I am never more busy than I am now," she said, without stirring a finger. . . "I heard, ma'am, that you were always making new beasts out of old. . . ." "So people fancy. But I am not going to trouble myself to make things my little dear. I sit here, and make things make themselves. . . . Know, that anyone can make things, if they will take time and trouble enough; but it is not everyone who, like me, can make things make themselves."

"But people do not yet believe that Mother Carey is as clever as all that comes to."

It is well to remind ourselves that this method has grown out of years of practice and experiment with feeble-minded children with abnormal children. We are thinking of the normal, healthy child as we know him in our nursery and in the streets.

There is another, and delightful inconsistency which shines from the book, and most, when Madame Montessori goes into the Children's Homes, shine about her. The sense training apparatus, with its limited outlook, is forgotten. "Some magic force has gone forth, stimulating an activity hitherto unknown." . . . "A great activity, a movement of a new sort, is born in the room." "Thank you, thank you!" cry the children, "for giving us that lesson!" This is the treasure of the humble, this may happen any day to ourselves as we become more truly the companions of our nursery children. This is not to be brought about by systems and methods: "the wind bloweth where it listeth"—we may trim our sails and be ready to respond in joyful spirit, when it visits us in the common day's work.

# TECHNOLOGICAL EDUCATION.

Papers to be read at
THE NORTH OF ENGLAND EDUCATION CONFERENCE,
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## SCIENTIFIC RESEARCH AND INDUSTRY.

By Mr. E. L. RHEAD, M.Sc. Tech., F.I.C.

In all widespread movements that have affected the destinies of mankind, although special application or abandonment may have characterised the individuals who have been the channels through which the effects were transmitted, the effects themselves were the outcome and product of the spirit of the time exemplified in an area and on a community the extent of which was limited by the facilities for communication. Local manifestations of any kind were local products only so far as the limitations of intercommunication produced isolation of spirit and local character. Given a general substratum of common ground and a zeal and energy that could not be confined to a local centre and we get a Peter the Hermit and a Christian crusade in the eleventh century.

The order of progress in the development of an action may be summed up as follows: perception, consideration, action. The first may be the recurrence in the mind of a vibration—a memory of other previous actions of an identical character, or a harmonised combination of memories which in consonance act together and respond to the appeal through the senses. The second may be voluntary or involuntary and momentary or prolonged, and the third is the outcome of the decision of the regulating centre. World movements follow the same course.

Seeing the necessity and possibility for advancement or alteration is reserved to some specially developed individual who is a product of the period. Consideration by discussion, more or less prolonged, and action, more or less resolute and wide-reaching according to the extent of the substratum of common ground possessed by those concerned and the intensity of the impulse, follow.

The ancient world and Middle Ages, as a whole, had only just reached the second stage—the talking stage. True, a few adventurous spirits had begun to act and by experiment endeavour to find the Philosopher's Stone and the Elixir of Life, and wizardry and witchcraft were imputed to all who thus endeavoured to turn over a leaf of Nature's book not already exposed to all eyes.

To appreciate the extent to which this speculation obtained, and the lack of appreciation with which experimental methods were greeted, it is not necessary to point to the persecutions of Galileo and Copernicus. Even as late as 1672 Dr. Thomas Sherley wrote "A Philosophical Essay," extending to 139 pages, "declaring the probable causes whence stones are produced in "the greater world from which occasion is taken to search into "the origin of bodies, discovering them to proceed from water "and seeds, etc."

Sherley says (p. 69, par. 114) "that stones do grow and are "made since the creation, every man's observation will suf-

"ficiently acquaint him, and the histories cited in the first sec-
"tion of this discourse do confirme: and that they are nourished
"by water is apparent from the situation of rocks by the sea, the
"production of pebbles at the bottoms of rivers, and that both
"mountains and also gravelly places are never destitute or un-
"accompanied by water."

Boyle, in "An Essay About the Origine and Virtues of Gems," published in the same year, specifically lays himself out to confute the notion that rock crystal consisted of water that had been subjected to intense cold. He says: "I found the weight of crystal to be to that of water of equal bulk as two and almost two-thirds to one. Which, by the way, shows us how groundlessly many learned men, ancient as well as modern, make crystal to be but ice extraordinarily hardened by a long and vehement cold, whereas ice is, bulk for bulk, lighter than water (and therefore swims upon it) and (to add to that objection against the vulgar error) Madagascar and other countries within the Torrid Zone abound with crystal." An error that survives yet among miners and one which I have frequently heard expressed. Here, then, we have at once an indication of the errors and limitations which may arise from philosophical considerations of observed changes.

The general state of experimental scientific work at this period is reflected in Van Ettem's Mathematical Recreations—dated 1696—a curious conglomeration of problems in arithmetic, hydrostatics, optics, and chemistry. In the "advertisement preface" he states that: "First, I place not the speculative demonstrations with all these problems, but content myself to show them at the fingers' end, which was my plot and intention, because those who understand the mathematicks can conceive them easily; others for the most part will content themselves onely with the knowledge of them without seeing the reason. Secondly, to give a greater grace to the practice of these things they ought to be concealed as much as they may, in the subtilitie of the way, for that which doth ravish the spirits is an admirable effect whose cause is unknowne: which if it were discovered, halfe the pleasure is lost therefore all the finenesse consists in the dexterity of the act, concealing the meanes and changing often the streame."

The applications of science to industry were practically non-existent. The enormous strides made during the closing years of the eighteenth and the last century have completely changed the conditions, and the perfecting of the means of inter-communication have made it possible for the whole of the world's influence to be so diffused as to eliminate provincialisms in practice and make available the whole of the world's knowledge and intellect. Formerly industries were dependent on slowly evolved processes, carefully pieced together and built up by tedious methods dependent on observation, often introducing trifling details and magnifying their importance. Now, by accurate determination of the essential features as the result of careful research, simplification and the consolidation of methods have become possible, resulting in economy with no loss of efficiency.

Probably no better case of the direct influence of scientific research on industrial practice can be cited than the heat treatment of steel following the discovery of the transformations it undergoes during heating and cooling, the exact temperatures at which these occur, and the physical conditions and structure of the metal as indicated by specific tests and the microscope.

These researches, of a purely academic character, carefully conducted by Roberts-Austen, Osmund, Stead, Arnold, and others, have clearly demonstrated the nature of the hardening change and the conditions necessary to produce any desired modification.

Compare a seventeenth century formula given below with modern practice: "Quench your blade or other instrument seven times in the blood of a male hog, mixt with goose grease, and at each time dry it before the fire before you wet it, and it will become extremely hard and not brittle, which is not ordinary according to other temperings and quenchings of iron."

Again, the value formerly attached to the special products of certain localities limited the quantity of material available for a given purpose. Careful research into the specific qualities and nature of the material to determine upon what its special value depends has enabled other products, modified by purification or by the addition of substances lacking, to be substituted.

Turning to the synthetic side, as the result of long and patient research, indigo has been artificially prepared, while many other natural colouring matters have been displaced by substances derived from coal tar and other sources.

That this is the age of scientific control is probably—at present—rather too much to say, but that its dawn has begun and made some progress is undoubtedly true. Already we find abroad that spirit of inquiry which indicates a dissatisfaction with present methods and a disposition to take advantage of aid that can be rendered by science. In the newer industries this is particularly the case, and in electrical engineering especially. Every newly discovered fact relating to materials or methods and every development is carefully watched for and put into practice at the earliest possible moment.

For the same reason every newly developing country that has no previously established industries and is untrammeled by tradition, more rapidly appropriates and assimilates new ideas, enters into new industries, and produces newer and more original methods. They are in the making and grasp the fact that it is as easy to assimilate new ideas and evolve modern methods as to take up and establish others of an older and less efficient character.

Countries in which certain industries are already permanently established must of necessity offer a less responsive field for the rapid appreciation of research work and its accomplishments than those which are only beginning to develop them.

In the one the capitalist looking forward sees the probability of the new method being more remunerative than the old and therefore adopts it. He is confronted by no drawback of capital already invested in older plant; no industrial conditions of any kind that fetter his action. His only need is labour of the required kind.

In older industrial countries and industries, locked-up capital, tradition, and industrial conditions are all acting as a brake on progress, and tend to perpetuate the existing processes and make it difficult to introduce new methods, and even more difficult to get them satisfactorily carried out owing to the apprehension and antipathy of the men in charge of the process.

This conservative attitude on the part of capitalists and workmen alike, is due to the fear of loss of some of their proceeds—the one of his profits, the other of his wages. And as the process is at the mercy of the men who carry it out, a capitalist with an established business is unfavourable to innovations so long as his methods produce economic results. It is in cases such as this that new capital must be called upon if progress is to be made, and in new countries and with new firms this is possible.

The initial fault, apart from the human element, is bad finance from the beginning, in looking to the realisation of immediate profit and neglecting to build up a reserve that will enable them to cope with modern advances. The scramble for dividends or the amassing of a fortune with the comfortable assurance that "it will last out my time" has killed progress and stifled research. The wise saw that "Necessity is the mother of invention" has served to allay any fears that might arise, and too often, after living in a fool's paradise, there has been a very rude awakening.

Even success has its retarding influences. When profits are large and capital available for the purpose (i.e., in the hands of those appreciative) is fully employed, there is no incentive to launch out in new directions or to look for new processes and products. And to this cause must be assigned the appropriation by Continental firms of the aniline colour industry. Chemical manufacturers here were too busy and too comfortable to worry about the simple production of aniline violet and were blind to their opportunities, with the result that the aniline and colour industry were allowed to pass, although the raw material was produced here.

And what must be said of the practice largely followed by limited companies and industrial corporations with large works and many branches and ramifications, who deliberately stifle progress by buying up and pigeon-holing patents and processes, which might interfere with their present methods of production, in order to destroy competition? It is a conspiracy of capital against the future welfare of the country, for in future years these methods will be discovered and worked, probably to the detriment of the country in which they were first discovered and which should have reaped the benefit. There can be no gainsaying the fact that sordid considerations underlie the whole fabric of industrial life, irrespective of class, and until necessity demands, or the increased prospect of gain is assured, forward movement is unlikely to take place.

This essential difference between academic and industrial ideals—interestedness *v.* disinterestedness—must receive consideration in dealing with the relationship between research and industry, especially in that aspect in which State or municipally aided institutions are concerned.

Sir William Anson, in his remarks on the registration of teachers in *The Times* of December 2, 1913, speaks of the "great" teacher as "one who while he teaches is advancing, by experiment or study, some branch of science or of the humanities," clearly implying that anything less than this is of an inferior order and setting up that as a standard of excellence for educational institutions. But for this purpose a teacher must have time and facilities in the way of apparatus. These cannot be obtained without money, and authorities are slow to appreciate the need of either. The payment of salaries which do not raise the teacher above the necessity of seeking further means of securing what is necessary to enable him to move in the sphere of life legitimately congenial to him and to associate with others of his own class without crippling his resources, and the occupation of his time to the fullest extent permissible, do not help to foster his love of research. If a teacher engaged in the higher grades of teaching work, where his energies must be further occupied in keeping up with the developments of the time, is to be officially employed to the same extent in point of actual teaching time as the teacher engaged in the lower grades of teaching, he has little energy or inclination left to further devote himself to either the elucidation of problems or the direction of others under his care to the same end. If the purse-strings are so tightly held that the necessary means to carry out experiments are withheld or only obtainable after tiring and unpleasant persistence, he is apt, unless he is an enthusiastic genius cast in a non-sensitive mould, to tire and to let things go on in the ordinary channels without the addition of the constant strain which this contention entails.

How many teachers in Technical Institutions are under the necessity of actually teaching for ten periods per week, totalling from thirty to thirty-three hours, together with the necessary incidental preparations, and other duties? Any time that is available for other work can only be obtained in short, disjointed periods and with an attitude of mind that is not conducive to original thought.

And yet he is, perhaps, the best man to undertake research work. He, if he is in his proper place, is conversant with the conditions under which the industrial application must be made and is able to steer clear of many of the pitfalls that beset the purely academic investigator of industrial problems, who frequently fails to appreciate the niceties of the situation. Not long ago an expert was called in to give advice on a certain chemical problem in a process which was carried out cold, and calmly suggested that to produce the desired result the liquid should be heated to boiling, quite ignoring the point that it would entail the boiling of hundreds of tons of liquor to be subsequently cooled, with no appliances or waste heat available for the purposes. Similar instances arising from a lack of consideration of the conditions constantly appear.

Such failures no doubt, together with the conservative attitude natural to minds of a narrower type (not broadened by scientific training and cramped by sordid considerations), have led to the distrust which exists in the minds of manufacturers, managers, and foremen of the older school, for scientific acquirements in their staff and also in their lothness to make departures from their usual practice or to take up new methods and ideas.

It is with them the old cry of "Can any good thing come out of Nazareth?"—and forms one of the stumbling-blocks in the association of scientific research and industry.

With Technical Institutions another weighty reason must be considered. The industrial advantages of a scientific research or discovery may become the monopoly of one individual, and authorities hesitate to spend public money in a manner that may result in individual benefit. The bogey of rates and ratepayers is ever in mind, and the efforts are crippled for want of funds. The manner in which the teacher earns his salary must be palpable.

With Universities this seldom happens, for the wider view of its directors rises above these considerations, although the amount available is limited.

Again, much of the research undertaken in academic centres is not of the nature that can be directly applied industrially, and this to a still greater extent arouses the opposition of many of those responsible for maintenance of Technical Schools. They fail to recognise that it constitutes the highest form of training for the students, and if its applications are not immediate it is paving the way for further development that will redound to the benefit of the community.

The encouragement of research assumes increased importance when viewed in the light of the modern tendencies in industrial life.

Formerly the men engaged in an industry possessed an all-round knowledge of its possibilities and requirements. This was acquired during an apprenticeship or probationary period and placed them in a much better position to make suggestions for improvement.

In the rush to increase production, reduce cost, and improve the financial result even this has been swept away, and the subdivision of labour that has taken place has reduced the number of men with an all-round knowledge of the industry to a very small proportion. As a result the prospect of new development and progress originating within the industry becomes smaller and smaller, and the only way to make good that loss is to foster research outside it.

The establishment of research laboratories in chemical works, and the appointment of special men in engineering works who have little or no connection with the routine work of the establishment, is growing, and is an indication that the necessity for this is becoming more fully recognised, but it is in an institution that combines all the phases of thought that contribute to the result, and in which men dealing with similar or collateral problems can mix with each other that such work can be better carried out. The atmosphere is more pregnant with influences conducive to success, and the problem may be viewed from every side.

The introduction, development, and maintenance of such an atmosphere is the highest point that can be attained in any school of learning, and those most capable of directing it into an industrial channel are the men who are familiar with the whole of the conditions appertaining to securing like results on a large scale.

Until this is done we shall be incapable of producing the highest class of student.

He must be given opportunity, must have his self-reliance developed, and must be given a sufficiently free hand. To enable this to be done in Technical Schools it will be necessary to make better provision and to secure greater elasticity in methods, at any rate in the higher stages. It is to be feared that at present the ideal is somewhat lower than this and that most schools are content to train men to occupy certain positions or to supplement the training received in the works in evening classes, to enable them the better to earn their livelihood.

This appeals to the majority of the students, who can see in the knowledge thus acquired a means of improving their position and perhaps making their labours lighter. The larger classes thus obtained figure prominently in the published reports of Education Authorities, and increases in numbers, and big totals appear to provide the justification for the spending of public money, a justification that appeals to "the man in the street," and may be used to allay any unrest or dissatisfaction expressed by the ratepayers. But this is not the highest ground of comparison!

The number of those desiring and capable of reaching higher attainments is much restricted, and the classes must be smaller and more expensive to conduct, and unless the determining authority is in hands capable of appreciating their value will be dropped.

Further, the establishment of laboratories for conducting practical experimental work of all kinds is necessary to train the mind to experimentally determine everything that is capable of direct proof.

The preliminary training for research work is important. The tendency to cram the minds of students with facts, figures, and details is unfavourable to the development of the inquiring spirit that must underlie all research work. The first necessity is a firm grasp of the principles of the main and all collateral subjects, not a series of definitions carefully reduced to a formula and committed to memory, but a living realisation of the principles embodied in the statements. The actual memorising of unnecessary matter is no help, and its whole purpose may be better served if the student knows where to find what he requires, and has at hand the sources of information necessary. Information is not the highest result to be aimed at. Imagination is the faculty that requires to be cultivated, trained, and so guided by the inculcation of principles that its flights of fancy are capable of realisation.

This can only be done when authorities rise to an appreciation of the larger benefits and make both their schemes of work and teaching conditions such as will enable teacher or student to look beyond the immediate present, and by a more prolonged but less narrow and particular preparation attain that educational summit that commands a wider outlook and from which it is possible to see beyond the limits of our present scientific horizon into new regions, which he sets out to explore in order to add their treasures to the common stock.

Genius is but the focussed instinct, knowledge and cleverness of the age, a concentration either by reflection, as by a mirror, of the possibilities of the time, or a brilliant light spot gathering up by refraction, as by a lens, the light proceeding from widely separated sources. The individual rays are too feeble to produce an effect, but their condensed product is a blaze of light. Without the individual rays the brilliance is impossible, and it must be the aim of each to himself contribute his share to the general advancement of knowledge and establish such conditions as will permit others to add their quota to expedite the illumination of the dark pages of Nature's book and the realisation of the benefits which accrue to the community.

## THE VALUE OF RESEARCH IN CHEMICAL INDUSTRY.

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To one who has been accustomed for over forty years to have at various times listened to or read addresses and speeches dealing with the application of scientific knowledge to industry, there does not appear to be much scope for novelty, or opportunity of adducing fresh examples, which might serve to emphasise the importance of research in and to chemical industry. To any one acquainted with the progress of chemical industry during the past fifty years, the attempt to appraise the value of research in industrial undertakings is very much as though one were to discuss the value of the heart to the human being.

But inasmuch as the discussion of this question touches matters of educational import, and that despite the continued reiteration much remains to be done, it may not be out of place on this occasion to devote a little time to the consideration of so self-evident a proposition as the title of this paper suggests. The last fifty years or so have witnessed the birth and development of scientific chemical industries, which have demanded for their initiation, as well as for their successful working, men well grounded in a knowledge of the facts and theories of the science of chemistry and familiar with the methods of inquiry employed in the advancement of the science, in a word, with scientific research. Workers so trained are ready to grasp the meaning of discoveries made by the researcher in pure science, and, realising their practical application and importance, are able to devise modes of working by which these discoveries are made to administer to our everyday events and contribute to the amenities of life.

There are two main aspects in the relation between research and industry. Of these two aspects, chemistry supplies many illustrations; I will restrict myself in considering this question to illustrations afforded by the history of the coal-tar colour industry. The very foundation of this industry, the observation made by the late Sir W. H. Perkin in 1856 in the study of the properties of aniline, that a mauve colouration is produced when this substance is treated with a solution of bleaching powder, is the fundamental fact from which the great coal-tar industry started. An idea of the magnitude of this industry which has grown out of this research of Perkin is conveyed by the fact that in the year of its jubilee £9,000,000 worth of coal-tar colours was manufactured in Germany.

This may serve as an illustration of the value of research to chemical industry.

The history of the manufacture of useful medicinal preparations from coal tar offers another illustration of the value of research to chemical industry. Knorr, in his study of ethyl-aceto-acetate and phenylhydrazan, obtained a substance, the investigation of the properties of which proved it to be a valuable "febrifuge," its production was naturally patented, and not long after its discovery it was put on the market under the name of "antipyrin." Just as we should find, had we the time, Perkin's discovery led many workers to study the production of colours from aniline and allied substances, so

Knorr's discovery directed many investigators to seek after new artificial medicaments, with the result that their manufacture and use have acquired considerable importance.

But the history of the artificial production of the natural colouring matter, derived from the indigo plant, is instructive as showing not only the value of research *to* chemical industry, but also its value *in* the industry itself.

The practical value of this colouring matter had been known to man from very early times and by methods of research carried out long ages ago the art of dyeing with indigo had been arrived at. In the early part of the last century the composition of the active principle in this dye was established, and as the knowledge of the properties of this substance grew, so chemists came to an understanding and an explanation of the rationale of the processes employed by the dyer. The mode of occurrence of this substance in the juice of the indigo plant was satisfactorily accounted for, and under the name of indigotin the chief constituent of this beautiful blue dye was isolated and its properties completely studied. Amongst the first steps toward the knowledge of the inner nature of indigotin was the discovery made by Liebig that by oxidation he obtained from it a substance styled anthranilic acid, a derivative of benzoic acid, from which a few years before Mitscherlich had succeeded in obtaining the hydrocarbon benzol, which, as everybody knows, is one of the products contained in coal tar.

Some years elapsed before this observation of Liebig found its proper niche in the synthetical production of indigo. A theory of chemical compounds, which would deal with the internal arrangement of the molecules and give a working hypothesis as to their constitution or structure had to be evolved. Such a theory was that put forward by Kekulé, about 1858, and followed a few years later by his theory of the constitution of benzol, in which the properties, both chemical and physical, of this compound are explained by the manner in which the atoms of its constituent elements, carbon and hydrogen, are bound to one another.

The researches of Baeyer and others had in the meantime provided a considerable amount of information respecting the transformation of indigo, and in 1869 Kekulé was led to formulate a theory as to the manner in which the atoms of elements, carbon, hydrogen, nitrogen and oxygen, are arranged in the molecule of indigo. In 1878, the jubilee year of the first successful synthesis of an organic substance, the prognostications of Kekulé respecting the constitution of indigo were confirmed by the researches of Claisen and Shadwell, conducted in the laboratories of the University of Bonn, and by those of Baeyer in the University of Munich.

Up to this point these researches were of scientific interest only, but in 1880 Baeyer discovered a mode of producing indigo in a manner compatible with industrial conditions; and although this method did not entirely realise the hopes of the manufacturers they were not daunted in their enterprise to secure a method of manufacturing this valuable product, which should compete on favourable terms with the natural dye. From this point on, the history of indigo affords an excellent example of the value of research *in* chemical industry, for the problem was now attacked and the inquiry pursued in the research laboratories of the great firm of chemical manufacturers —the Badische Aniline and Soda-Fabrik at Ludwigshafen on the Rhine. The outcome of the researches carried out by the scientific staff of this firm was the perfecting of a process, based upon the discovery of Heumann (1890), whereby indigo is made from the hydrocarbon, naphthalene, which is abundantly present in coal tar. Naphthalene constitutes a comparatively cheap raw material, and from it indigo can be manufactured at a price which places it in favourable competition with the natural substance.

The late Dr. Brunck, at one time director of the Bädische Aniline and Soda-Fabrik, has told us that twenty years were spent in these researches, and that the firm expended about a million sterling in experimental investigation relating to this subject; and twelve years ago this firm estimated that they would be in a position to manufacture annually as much indigo as is produced from 250,000 acres of Indian soil; in fact, a production almost equivalent to that grown in the province of Northern Behar, which formerly gave employment to about one and a half millions of people.

How far these anticipations have been realised is shown by the fact that in 1909 a quantity of indigo worth no less than £1,900,000 was exported from Germany to the continent of Asia alone.

Such a result as this amply demonstrates the value of research *in* chemical industry, nor was the manufacture of indigo the only result that accrued from these researches, for its production by this process required a sulphuric acid of a particular constitution and composition. And so we find concurrently with the investigation of the synthesis of indigo there were being carried forward researches on the manufacture of one of the staple products of chemical industry, viz., sulphuric acid, with the result that the "contact process," based on the observations made by Phillips in 1831 has been fully established as a means of manufacture, and facts of the greatest scientific interest and importance brought to light.

But what do such achievements as these show? The value of scientific research in industry; nay, rather the absolute necessity for research, if industrial enterprises are to be successful. Still further do such achievements make apparent that the full realisations of the benefits, which the scientific inquirer can confer on industry, can only be secured when the industries are controlled and captained by those who by their training and knowledge appreciate and value the advances made by the investigator in pure science, and who readily surround themselves with men who are equipped with a knowledge of their science and have already made themselves familiar with the methods of science by a training in research.

The coal tar colour industry is by no means the only one which illustrates the value of research *to* and *in* chemical industry. The history of the growth and development of those enterprises at Jena of Carl Zeiss and of the allied firm of Schott and Genossen afford numerous examples of improvements and innovations which have been instituted as the results of researches made by the scientific staff of these manufacturers. For whether it be the manufacture of glass or the construction of optical instruments of all kinds, made to meet the requirements of the ever-advancing scientific industries, we find, first the scientific examination of the problem, then the application of the result of such inquiries are made in the factory itself, and not only are industrial arts of various kinds advanced thereby, but the bounds of knowledge extended by the researches made in the industry itself. In like manner the manufacturer of the incandescent gas mantle, of the metallic filament electric lamp and many other of the things we use in everyday life, which have come to be regarded as essentials, are the products of scientific research.

Even the empiric arts, such as the extraction of metals from their ores, the manufacture of iron and of steel, for instance, have been developed and improved by the facts brought to light in the scientific researches, whose objective may have been an explanation of the phenomena connected with these processes themselves, or the discovery of new methods of treating natural materials.

Numberless illustrations, in fact, might be cited of the "value of research *to* and *in* chemical industry," and when all has been said, the question is seen to be one of education—scientific industries, and industries become more scientific day by day, require scientific direction—educated capital—and scientific labour to superintend and direct the various phases of the manufacture.

The pre-eminence of Germany in the scientific chemical industries is mainly the result of the far-sighted policy of its governors, who have fostered every branch of education, who have systematically encouraged the prosecution of research in its Universities, and have with no niggard hand expended money on the promotion of scientific education in amounts which put to shame the sums voted for similar purposes by the Government of this, the richest country in the world.

## RESEARCH IN ENGINEERING.

By PROFESSOR BURSTALL.
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In considering the value of research in the engineering industry, it may be as well to define what the term "engineering" should be taken to include. The principles on which either a structure or machine is constructed are those which have been obtained by the mathematician; the physical properties of solids, fluids, and gases are the work of the physicists; the chemist is concerned with change of form of the elements.

Before this knowledge can be utilised in the service of man in construction further less definite knowledge has to be employed, which is included in the term "practical experience." As an example of what is meant, consider the strength of materials, such as iron and steel: the mathematical theory is well known and the physical properties have been fully worked out; a structure such as a bridge or a steel roof can be designed with great exactitude as regards the stresses involved even when the form is one which is novel and about whose behaviour there is no experience. This is proved by the construction of the Forth Bridge, the first of its form and the largest span ever constructed, yet about whose stability and strength there was never any doubt. In many cases construction cannot be worked out with such exactitude because the forces involved are of such a complex and variable character that a complete solution cannot be obtained. It is here where the true function of the engineer comes in, and where he can construct a workable machine even when he does not know exactly all the factors which were involved. As an example, consider the crank shaft of an engine: it is quite certain that the formulæ used in the calculations of its strength are only rough approximations and that many factors which enter into its actual strength have to be neglected in order to obtain any solution at all; yet the engineer rarely fails to design a shaft capable of withstanding the forces to which it will be subjected; this is because he is able to use past knowledge of what similar shafts would withstand, or, in other words, practical experiments had been made and a result obtained which could be utilised in a different form; this is what is meant by the term "research." There is of course a serious risk in such reasoning, as it may be that the result of one experiment may be used as the basis on which to design a machine of wholly different form, and sometimes with disastrous results. If the steam engine and the internal combustion engine be compared, it will be found that the safe working stresses in the former may be materially higher than in the latter, even when allowance is made for the differences of forces and working fluids, the explanation being that we know very little as to the behaviour of iron and steel when the stresses to which they are subjected are other than the purely static force found in the bridge roof truss or testing machine. Even the classical experiments of Wohler, valuable as they are in forming a theory of variable stress, do not throw much light on the stresses that take place in the internal combustion engine, because Wohler stresses were put on through the medium of a spring, while in the engine the action is in the nature of a blow, which may, and probably does, set up a quite different stress.

The student of the so-called pure sciences often views the results of engineering research with some contempt, because the results are often conflicting with those of other experimenters, the truth being that engineering researches contain so many variables that only in rare cases can broad general conclusions be deduced. It must not, however, be inferred that engineering experiments are therefore useless and misleading; the steam engine experiments of Willans cannot be reconciled even among themselves in all points, yet the Willans law of the straight line was deduced, which has been found to be generally applicable.

It may be useful to indicate what research has done for engineering and directions in which knowledge is wanted. The high tensile steels now so widely employed in the automobile owe their discovery to experiment and research; the high speed steels which have so increased the output of machine tools are the result of experimentation; the steam turbine and the internal combustion engine are both examples of machines developed from the knowledge of thermodynamic principles.

Perhaps the best examples of the value of research are to be found in electrical engineering, which owes its entire existence to the labours of scientific men. Such men as Faraday, Hopkinson, Tresca, Clerk, Maxwell, Hirty, and many others are those who have laid the foundations and rendered possible such wonders as wireless telegraphy.

As to what fields now remain to be explored there are many directions in which there is at present very little knowledge. The mechanical engineer has nearly reached the limit as regards the construction of machines, as such materials as cast iron and steel have been little improved; what is now required is a metal with all the properties of cast iron but greater strength. Cast steel has vastly improved, but so far has not to any extent superseded cast iron for most purposes.

Research in the properties of materials from an engineering point of view has so far been confined mainly to the testing machine, and, useful as such tests are as regards the value of a material for construction, they throw but little light on many problems of importance. Very little experimentation has yet been done in complex stress or in the effects of repeated blows; such research is of the greatest difficulty and is most laborious. Even in the calculation of the strength of struts engineers continue to rely on an empirical formula based on experiments made by Hodkinson nearly sixty years ago.

There are also many subjects of interest to both chemist and engineer that await solution: the application to industry of liquid air and other liquefied gas has yet to be made; also there are great possibilities before the catalictic actions as regards changing the liquid hydrocarbons, of which for fuel purposes there is now such a great demand.

These catalictic actions are worthy of fuller description from their novelty and utility. If a hydrocarbon such as is produced in the distillation of coal tar be heated by the admixture of superheated steam and then brought in contact with metallic nickel or certain of its salts, the chemical composition of the oil will be altered by having picked up additional hydrogen atoms; as yet none of these actions have been fully studied, but there is no doubt of their value in many directions. The treatment of coal for the purpose of extracting the by-products, such as various oils, sulphate of ammonia, cyanide of potassium, coke and gas, is an industry of immense dimensions, but so far attention has been entirely devoted to the production of gas. The more general problem of the treatment of coal at the pit mouth with the object of producing a coke suitable for domestic purposes has not so far been investigated, although it is agreed that the only feasible solution of smoke prevention is some form of fuel treatment.

There now remains the most important question of all, namely, how and where research should be carried out. Of course the best method of all would be for a firm of manufacturers to have a research department in a similar manner to the German aniline dye work; this, however, only benefits the one particular firm, as naturally such information as is obtained is kept private.

The Universities and Colleges will continue to investigate many special problems so far as their means will allow, but there still remain many points which are too long and problems which require large and costly apparatus beyond the reach of the Universities.

Much important work could be undertaken if the large commercial concerns could assist the Universities; in many ways this would be the best plan of all, but there are obvious difficulties in joining together academic and commercial bodies for the purpose of obtaining knowledge that may have a pecuniary value to the latter. The great engineering societies have always encouraged research by special committees to undertake particular problems, and much valuable work has been done in this manner.

# ARTS AND CRAFTS.

Papers to be read at
THE NORTH OF ENGLAND EDUCATION CONFERENCE,
BRADFORD,
On Friday, January 2nd, 1914.

## CIVIC IDEALS IN ART.

By Mr. W. ROTHENSTEIN

In accepting the invitation given me to speak at the North of England Education Conference on the subject of the civic attitude towards art, I take it that I am to be allowed once more to plead for a more intelligent use of the artistic power still existing amongst us and to express again my belief that the mere appreciation of works of art, however stimulating and enlightening, is of much less value than the actual practice of the most modest among the crafts.

The conviction that looking at good pictures is of great educative importance is very widespread, and the municipality which builds the handsomest picture gallery and fills it with the greatest number of works of art, is regarded as the most art loving amongst our cities.

The consequence is that our municipal authorities vie with one another in bringing together pictures, good, bad and indifferent, either for temporary exhibition or for their permanent collections. There their responsibility appears to cease, and they can scarcely be blamed when the great capitals of Europe offer no better example.

Everywhere one finds the same passion for collecting, and huge sums are daily paid for works of the past, removed from their own appropriate surroundings, in order that they may be imprisoned in a museum, or find an alien home in the houses of the rich. The fruitless sterility of this greed for the possession of works of art which are not the product of our own age, the vast sums paid for the privilege of hanging them for a few years on our own walls, seem to shock few people. We have a National Arts Collection Fund, but no fund for encouraging that self-same spirit of creation, which gave to the people of the past so many noble works which exists to-day amongst us, wherever men flourish, but which is burning, through lack of understanding and employment, with so flickering a flame.

For collecting alone is held to be important; connoisseurship is the cuckoo which has ousted the disheartened crafts from their nest.

Dealers ransack the cities of the world for pictures, sculpture, woodwork, ironwork, tear out altar pieces, railings, stone ornaments, metal work, tiles and pannelling with remorseless energy, in order that these poor maimed things may be sold for great sums, and thus excite others to possess like treasures, yet of the self-same power, which exists in our own day to make things of similar beauty and interest, were but the demand and patronage forthcoming, they know and care little.

Do we find, if we go into the houses of the people, for whose enlightenment our museums and art galleries are intended, everywhere, according to their means, sound and seemly furniture? Are the common objects in daily use well made and shapely? Surely, if the museum does not perform this practical service, if the objects exhibited do not help us to make and use similar ones for ourselves, if the pictures in our public galleries do not prevent our hanging up trivial prints and photographs on our own walls, may we not stop and reflect and ask ourselves whether it is possible that these museums and art galleries are not educating the public at all, and whether there may not perhaps be a better and more fruitful investment of our means and our intelligence. Even though our rich men's houses be filled with impeccable works of art, with choice antique furniture from bedrooms to cellar, you must bear in mind that it is not very difficult to get our eyes accustomed to detect good things in the sale rooms and in the galleries of dealers. It is much more difficult to appreciate living ability with no label other than good workmanship and vitality, to co-operate with it and make intelligent use of it, praise it for its real beauties, and discourage its prostitution in any form. Surely in this way alone can a man prove himself a true patron of art. There are in every village and in every town and city men still capable, under proper guidance, of building noble houses, of making sound and beautiful furniture, of forging iron with a high skill, of carving wood and stone in a fresh and living way, so that the spirit of our own age might be handed down in its material as well as its intellectual works. But our rich men and our municipalities play for safety, and demand nothing but servile and dead imitation from living craftsmen.

When I think of the rich and fruitful lives we could encourage among thousands of people, were it but realised that this masquerading in clothes borrowed from the past is an unworthy and sterile thing, then only do I think that our age is indeed inferior to past ages. Not because we are less gifted—we do not know what power lies hidden in man until it is called for—but because we are so blind to the possibilities that life itself never ceases to offer us. For here all about us are young men and women aware of latent possibilities in themselves, full of a vague sense of enthusiasm, of a desire to devote their lives to a high cause, who but wait for opportunity and inspiring leadership to develop into excellent and useful members of society as skilled craftsmen and craftswomen. But because there are expert gardeners at Kew, are we not to grow flowers in our own borders?

Why should we not ourselves make our own cities as bright and fair as we can. Can a hundred pictures hanging in a picture gallery take the place of the fruitful industry of a thousand hopeful men and women? And do we not get the maximum of wisdom and happiness from the intelligent use of our best faculties? I have known many connoisseurs and collectors, but they have not all been good, humane or wise men, but I have never met a fine craftsman without a strong sense of the beauty of the world, without a hatred of injustice, or an enthusiasm for a noble and gallant attitude towards life.

Yet we are allowing the crafts to die. True we have everywhere schools of art, and we encourage young people to make use of them; but when they have been taught by the able teachers we provide, will they find themselves called upon to practice the crafts they have learned honourably and with a whole-hearted devotion to the principles of good workmanship which have been instilled into them? Alas, if we teach them good and honest methods, we have not sufficient faith in our own institutions to make use of their abilities for the work which is everywhere required in their own native city, and we allow them to drift into occupations where neither love for their work nor probity are required of them. Most of us here know this to be true, but so long as we are willing to pay inflated prices for works of the past, and to demand only indifferent workmanship in order that we need pay the least possible price for the handiwork of our own contemporaries, this tragic state of things will continue.

Education has unfortunately given importance only to those forms of learning which enable men to succeed in the professions; hence much of that knowledge which most capable people possessed a century ago and the older country folk still possess, the knowledge which comes from a hundred handy ways of doing things for ourselves, is slowly dying out. Our democracy is occupied, and rightly occupied, with the improvement of the material conditions of labour and of the workers. It is the hope of many of us that when these conditions have been permanently improved and readjusted and the great victory of a seemly life for every man, woman, and child in this country has been won, trades unionism will turn its attention to a greatly improved standard of workmanship, and that the day will come back to us again when dishonest work will no longer be tolerated. Beauty and good workmanship are old and faithful lovers and are seldom met apart. I have more confidence in the judgment of the man who can distinguish between honest and scamped work than in that of the many distinguished experts, who are called in on so many occasions to advise and pass judgment upon questions of beauty and style.

It is to urge upon each one of you to help to do away with this reproach that the future will one day bring against us—that we spent millions upon hoarding up works of art while we stood helpless, seeing the crafts die of indifference, for want of a little common sense and courage and imagination, that I stand here before you to-day. What avails it that we spend now large sums upon our museums and galleries, if we neglect our primary duty, the duty of supporting and encouraging what is fairest and noblest among living men and women? You, so many of whom are teachers in our schools of art, would surely agree that to make practical and efficient use of the talents you are guiding and moulding would be a greater work for our corporations than that of eternally exhibiting and buying pictures for their galleries. You know, too, that were we willing to pay a fair price for the best workmanship, and were it regarded as discreditable to buy and sell shoddy work, our crafts would quickly revive. Even to-day it is still possible for the best work of our cabinet-makers, stone masons, wood carvers, and blacksmiths to hold its own with any the past can show us. Can we not, then, shake off this apathy before it is too late? Every class may look to the State with some little confidence, but of the claims of the living crafts the State is ignorant. Our politicians, our men of business, and our municipal authorities alike ignore the practical bearing the proper use of this important side of human energy has upon the well-being and vitality of the Empire.

There are many of us who believe that no machine has yet been invented so perfect as the human hand, that no education can equal that which we get from the practice of a trade which exercises our highest and healthiest faculties and that no social system which fails to make use of the best and most honourable instinct we are all endowed with—the instinct to do our best—can for a moment be considered with any pride.

Let us, then, not rest until we have made our authorities see that there can only be one civic ideal in art, and that is to train their own citizens so that, by degrees, little by little, all the craft work required in the city shall be done by the men who are best equipped for the different tasks. Let them begin by informing themselves regarding the principles that underlie all good workmanship. If they are to be generous with public money, let it be in applying these principles by demanding the best, and only the best, from those among whom they live, and let them have more faith in their powers, latent and undeveloped though they be. If they had the intelligent and enthusiastic support of an awakened public opinion, I for one believe that they would light a fire in England which would warm a million hands and hearts.

That such an ideal would be welcomed by the teachers all over the country I think you will agree; under present conditions their position must inevitably be unsatisfactory to themselves, and they must suffer from a natural hesitation in inspiring a conscientiousness and an enthusiasm for sound work, when they must themselves be painfully aware that something very much less efficient will alone enable their pupils to be sure of a living. If each city strove with this end in view, what a noble spirit of rivalry in excellence and beauty we might have! We ourselves cannot hope to see it, nor can our children; but we can hope to see at least a beginning made in this the only sane and safe ideal for our civic authorities, before we look for the last time upon that loveliness of the earth and sky, some reflection of which man has succeeded in giving to the work of his hands.

## PREPARATORY EDUCATION FOR THE ARTS AND CRAFTS.

By Mr. W. B. DALTON

(Principal of the Camberwell School of Arts and Crafts.)

At fourteen years of age by law a boy or girl may drop his or her books and never open them again.

The life that follows this long practised failing has consequently, by habit, been regarded as something apart from, something disconnected and detached from these early years of education.

Only too often this sudden chance, this ending of one thing and the beginning of another, this dislocation of mental attitude has been the undoing of many a young man. We have known cases of men who were railway porters, lift attendants and messengers, who have possessed obvious craft talents that have lain long dormant, where the discovery has been made by them too late for possible redress. In many cases also, in art trades in a few years this beginning of knowledge has been forgotten, forgotten before the development of the subsequent craft life has advanced far enough for the intimate connection between school days and work days to be realised; the consequence has been that we have turned out an inferior where we might with better organisation have given the world a superior article.

With the attention that has been directed to education within the last decade, it is not surprising that this void beween school life and working life has not escaped the consideration of thinking people. It has rightly come to be regarded as a danger to subsequent efficiency, and many experiments have been tried, both from the scholastic and from the technical sides, to bridge this break in the road, so that progress should be continuous, and that one form should merge into another imperceptibly in at least as far as the beginnings of the subsequent vocation is concerned, so that literally it may be an uninterrupted highway of progress.

We have had on another hand, a group of observers watching the movement and the changes that have been taking place in our industrial systems, who have from time to time, perhaps with some perturbation, drawn attention to the decline in the good old system of apprenticeship. It has been our privilege to come into working contact with scores and scores of apprentices, and also in a similar degree with large numbers of the newer unindentured type, called learners or improvers, and we can affirm that—except in isolated cases—the trade upbringing of the improver is vastly inferior to that of the apprentice; it is casual, and too readily dissolvable by either parties to afford even a minimum groundwork in stability and permanence for the final good of any young person on the threshold of life's work.

As far as we have been able to compare through observation of students, and craft with craft, where, in one case the principle of apprenticeship still exists, and in the other where the more casual improver system is followed, we can with confidence assert that the tight and closely knit arrangement of apprenticeship gives a trade an enormous advantage over the weaker, looser arrangement that so unfortunately has come to be the vogue.

Thus, almost unconsciously, on both these sides a public opinion has been forming, and expressing itself in many tentative ways with a view of minimising—if not of overcoming—the inimical conditions that have been described, and concerning which a satisfactory solution is so much to be desired. Both groups are quite of one mind as to the period of life when the effort should be made to meet the circumstances that have been described; both have pointed to the early years of trade life, and in addition, the former group, to meet its ends, has called attention to the latter years of elementary school life, with the suggestion that, in addition, appropriate trade instruction should be added in small quantities to the other educative work.

Now we must turn for a moment to examine the types of industrial activity in connection with which it would be possible to meet the position to which our early words have been directed. Though industrial life may be very varied, and offer every hue of possible colour, it is readily divisible, with perhaps some little overlapping, into certain broad divisions, such as women's work, commercial, technical, and craft work.

And if we are prepared to recognise the years of later school life and early trade life, that is to say, from thirteen to sixteen years of age, as indicated in a previous paragraph, we come at once to actual ground upon which educative work could be based in any of these respective divisions. Being interested in the craft division, and parts of the women's division, we dismiss the others, because they are outside our sphere of interest.

Just now we spoke of experimental and tentative efforts having already been made; some, indeed, are many years old; some few, fewest of all, are in the craft sub-division; but scarcely any reach the conceptions that were outlined as the ideals of those who had thought deeply on these problems; they have fallen short principally on the count of educational continuity, as little or no provision was made in them for the further development of general knowledge.

These beginnings have had many ups and downs which need not be discussed. We now desire to call attention to the place this subject had reached in July last, when the Board of Education, as it were, gathered up the threads of these varied efforts and endeavoured in an interesting little document to pave the way for further efforts by what might be described as a group of trade school building laws which it had devised. In a prefatory note to these rules it is stated that "among educational developments of recent years none have been more interesting and important than the growth of Junior Technical Schools that is to say, Day Schools which provide courses for boys and girls for two or three years after leaving the Public Elementary Schools, and which continue the general education of their pupils, while at the same time aiming at preparing them for industrial employment. The growth of these schools has undoubtedly been in response to a definite educational need, the need, namely, of those who can afford some time for the continuation of their full time education beyond the normal age for leaving the Public Elementary School before entering upon industrial life. Fostered by the interest of Local Education Authorities and aided in many cases by the ready co-operation of those actually engaged in industry, whether as employers or employees, these schools have now reached a point of development at which they may fairly claim to constitute a distinct educational type, and to require special treatment under the Board's regulations."

"It is the purpose of the following new regulations to recognise that the schools have emerged from the experimental stage, and by means of the increased grants now made available, to encourage the establishment of more Junior Technical Schools and to strengthen and improve the work of those which have already been established."

These schools are called in this document "Junior Technical." It may be that in the divisions of individual occupation, like women's work, craft work, commercial work, and technical work, that it was in the technical department, that most of the experiments referred to by the Board were carried out; no other division gets any credit. We regard this title as a particularly unfortunate one. There is much in a name. This might tend to circumscribe the character of the growth. We should prefer Junior Trade Schools—"Technical" has, by educational usage, come to be viewed in a limited sense; the good old word "Trade" is more comprehensive, it means more, and would be more fully understood by a wider circle of people.

This is a digression, but one, we think, that is cogent to our subject, for our assembly here this afternoon is to determine in the department of craft—and remember that next to agriculture the crafts are our oldest industries and we possess in them a glorious heritage—how far schools of art and schools of arts and crafts are interested in these problems, what character such Junior Schools of Craft should have, and how their establishment would best be promoted. Also, it should be noted that certain phases of women's work belong broadly to the craft sub-division, and would be more appropriately housed here than amongst the schools of any other sub-division; I might instance one such, the subjects of dressmaking and dress design.

We will elaborate for a moment the interest this question has for Schools of Art—no elaboration is necessary to some. They have in their experiments shown worthy pioneer spirit, but it must be generally admitted that, as regards the majority, their typical art work has been arranged on an individual rather than on a collective basis, and on draughtsmanship rather than on a craft basis. Inasmuch as a collective basis is the only possible one for a Junior Craft School, wholly new ideals of organisation would have to be established that would be suitable to students working in groups at courses covering two or three years. Further, it is reasonablly arguable—owing to the years of the pupils—that the class organisation for these schools would finally resolve itself into something not dissimilar from the organisation that usage has made in Primary or Secondary Schools. It may be that this is a subject touching schools located in large centres of population more than any other, but wherever a well-defined craft exists that is capable of absorbing fifteen to twenty boys or girls per annum, and where the general sympathy and support of that craft has been previously obtained, no future difficulty ought to arise that should prevent a successful issue being assured.

The rules by which the Board of Education would secure satisfactory governance for these schools are set forth in their issued regulations, and no good purpose would be served by traversing this ground, and, with minor reservations, we concur; we think, however, that this work being a preparation for business, should have some approximation to business conditions and should be, in fact, a foretaste of the future.

A more ample statement on the question of hours of work and working years appears to us desirable; in our view, no school working year should be less than forty-two weeks, and no second-year student should work less than thirty-five hours per week. It must be remembered that it has been said with some vehemence in the controversy on these matters that you cannot reproduce the workshop in a school. We do not want to; we think that by thoughtful arrangement something better can be done; but the minimum hours mentioned, and the minimum school year outlined, will scarcely help to the ripening of faith in such matters.

To ascertain what measure of support or condemnation would likely be given to a training that was partly scholastic in its character and partly devoted to craft work, in the spring of last year we circularised employers in two crafts that differed widely from each other. They were commercial black and white work and heavy decorative metal work, and we took the names of employers, without special selection, from the columns of the London Directory.

In the matter submitted to them we outlined for their consideration a skeleton scheme for the establishment of day schools in each subject for boys about 13½ years of age who had shown a bent, and had been specially selected because of this bent, for each type of work. Few people realise the enormous national loss incurred in the casual, wasteful system by which young people now become employed, only too often, in work for which Nature never intended them.

We suggested in the case of heavy decorative metal work a two years' course, and in that of commercial black and white work a three years' course, at the end of which the boys would proceed to work in the craft that he had been learning.

Letters were addressed to 113 firms engaged in commercial design, and replies were solicited to the following questions:

1. Are you in favour of such a school being established?
2. Would you be prepared to employ boys who have been satisfactorily trained for three years should you have a vacancy?
3. If so, what would be approximately the commencing wages?
4. What career would be open to the boys?
5. About how many trained boys would you need each year?

Of the firms circularised, 67 sent replies as follows:—

To Question 1:—

Affirmative—41.

Negative—6.

Declined to give an opinion, mainly for reasons that their works were abroad or out of London, or that they do not employ boys—20.

To Question 2:—

Affirmative—31.

Negative—3.

No opinion expressed—33.

To Question 3:—

The replies were very varied, most of the employers stating it would mainly depend upon the skill and ability shown by the boy; but from 12s. to 15s. a week seemed a general average wage for a boy 16½ years of age.

To Question 4:—

The concensus of opinion was that, as draughtsmen or designers, from £2 10s. to £6 a week, according to ability.

To Question 5:—

We gathered from some 14 employers that there would be an outlet for some 25 boys a year.

A similar inquiry was directed to 94 firms engaged as decorative smiths, metal-workers, brass and bronze casters, etc., and from these 48 replies were received as follows:—

To Question 1:—

Affirmative—27.

Negative—10.

Declined to express an opinion—11.

To Question 2:—

Affirmative—20.

Negative—10.

No opinion expressed—18.

To Question 3:—

The commencing wages would be from 8s. to 10s. a week.

To Question 4:—

The concensus of opinion was, as a craftsmna, about £2 10s. a week and that highly skilled men would earn more.

To Question 5:—

We gathered from 15 employers that there would be an outlet for some 32 boys a year.

We do not propose to attempt to draw wide inferences from these figures; there are, however, two features that appear noteworthy. The first is that the affirmative replies far exceed the negative; there is no active opposition.

The second is that in one craft 14 firms considered they could absorb 25 boys per annum, and in the other 15 firms could absorb 32 boys per annum. Our view is that an effective school should have introduced into it about 10 students per year, or 20 students together; or, if the course is a three-year one, 30 altogether. Such provision would be caution itself, with such numbers the margin of safety in each case could not possibly be impinged upon.

In pursuing this subject many personal interviews with the heads of establishments, large and small, followed in sequence on these letters; we were confronted at first hand with craft conditions, and learned much that was illuminating of present-day practices. There was a concensus of opinion amongst these people that vocationally, craft had received scant consideration from responsible bodies in any other way except what was supplemental. Almost all were prepared to assist in a consultative capacity if such schools as are here outlined were established.

Acting on the information that this correspondence and these visits supplied, we have endeavoured to elaborate what we hope you will consider satisfactory time-tables for both of these schools, ones that we believe would also satisfy the regulations laid down by the Board of Education, to which your attention has already been directed; and we have further assumed that both these schools would be conducted in the same premises.

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### Day Trade School—Decorative Metalwork – Time-table
### 1st Year.

| Time. | Monday. | Tuesday. | Wednesday. | Thursday. | Friday. |
|---|---|---|---|---|---|
| 9 to 11. | English. | English. | English. | English. | English. |
| 11 to 12 30. | Drawing and Design. | Workshop. | Workshop. | Technical Lecture. | Drawing and Design. |
| 1.30 to 2.30. | Technical Lecture. | Modelling. | Geometry. | Modelling. | Workshop. |
| 2.30 to 4. | Workshop. | Workshop. | Workshop. | Workshop. | Workshop. |

## Day Trade School—Decorative Metalwork—Time-table 2nd Year.

| Time. | Monday. | Tuesday. | Wednesday. | Thursday. | Friday. |
|---|---|---|---|---|---|
| 9 to 11. | Workshop. | Workshop. | Workshop. | Workshop. | Workshop. |
| 11 to 12.30. | Do. | English. | English. | English. | English. |
| 1.30 to 2.30. | Do. | Modelling. | Workshop. | Modelling. | Drawing and Design. |
| 2 30 to 4. | Geometry. | Drawing and Design. | Drawing and Design. | Do. | Do. |
| 4 to 5. | Technical Lecture. | Do. | Do. | Technical Lecture. | Do. |

## Analysis of Time Table.

| First Year. | | Second Year. | |
|---|---|---|---|
| Subjects. | No. of Hours. | Subjects. | No. of Hours. |
| Drawing and Design. | 3 | Drawing and Design. | 8½ |
| Modelling. | 2 | Modelling. | 3½ |
| Geometry. | 1 | Geometry. | 1½ |
| Workshop Practice. | 11½ | Workshop Practice. | 13½ |
| English. | 10 | English. | 6 |
| Technical Lectures. | 2½ | Technical Lectures. | 2 |
| Total per Week | 30 | Total per Week | 35 |

Physical Exercises 9 to 10, 1st Year Students, and 10 to 11, 2nd Year Students, on Wednesdays and Thursdays.

## Day Trade School—Commercial Design—Time Table—1st Year.

| Time. | Monday. | Tuesday. | Wednesday. | Thursday. | Friday. |
|---|---|---|---|---|---|
| 9 to 11. | English. | English. | English. | English. | English. |
| 11 to 12.30. | Drawing of Ornament. | Lettering. | Geometry. | Technical Lecture. | Drawing of Ornament. |
| 1.30 to 2.30. | Technical Lecture. | Do. | Drawing of Ornament. | Lettering. | Lettering. |
| 2.30 to 4. | Object Drawing. | Drawing of Natural Forms. | Object Drawing. | Drawing of Ornament. | Geometry & Perspective. |

## Time Table—2nd Year.

| Time. | Monday. | Tuesday. | Wednesday. | Thursday. | Friday. |
|---|---|---|---|---|---|
| 9 to 11 | Figure Drawing. | Design. | Figure Drawing. | Design. | Lithography |
| 11 to 12.30. | Lithography. | English. | English. | English. | English. |
| 1.30 to 2.30. | Do. | Lettering. | Lettering. | Drawing of Ornament. | Drawing of Natural Forms. |
| 2.30 to 4.0. | Lettering. | ,, (3.30). | ,, (to 3.30) | Do. | Do. |
| 4 0 to 5.0. | Technical Lecture. | Object Drawing at 3.30. | Object Drawing at 3.30. | Technical Lecture. | Do. |

### TIME TABLE—3RD YEAR.

| TIME. | MONDAY. | TUESDAY. | WEDNESDAY. | THURSDAY. | FRIDAY. |
|---|---|---|---|---|---|
| 9.0 to 12.30. | Life. | Design. | Life. | Drawing of Ornament. | Lithography. |
| 1.30 to 2.30. | Lithography. | English. | English. | English. | English. |
| 2.30 to 5.0. | Drawing of Ornament. | Object Drawing. | Object Drawing. | Animal Drawing. | Design. |

Physical Exercises—9.0 to 12.30 on Wednesday and Thursday.

1st Year Students— 9.0 to 10.0.
2nd Year Students--10.0 to 11.0.
3rd Year Students—11.30 to 12.30.

### DAY TRADE SCHOOL—COMMERCIAL DESIGN.
### ANALYSIS OF TIME TABLE.

| FIRST YEAR. | | SECOND YEAR. | | THIRD YEAR. | |
|---|---|---|---|---|---|
| SUBJECT. | NO. OF HOURS PER WEEK. | SUBJECT. | NO. OF HOURS PER WEEK. | SUBJECT. | NO. OF HOURS PER WEEK. |
| Lettering. | 4½ | Lettering. | 5½ | Life Drawing. | 7 |
| Object Drawing. | 3 | Object Drawing. | 3 | Object Do. | 5 |
| Drawing, Natural Form. | 1½ | Drawing, Natural Forms, etc. | 6 | Animal Do. | 2½ |
| Geometry and Perspective. | 3 | Design. | 4 | Drawing, Ornament. | 6 |
| Drawing, Ornament. | 5½ | Figure Drawing. | 4 | Litho. Drawing. | 4½ |
| Technical Lectures. | 2½ | Lithography. | 4½ | Design. | 6 |
| English. | 10 | Technical Lecture. | 2 | English. | 4 |
| | | English. | 6 | | |
| Total hours per week | 30 | | 35 | | 35 |

These are the means we would adopt to promote early craft instruction. We have gone, step by step, over the foundations that appear to be the desirable ones upon which to build our edifice. Our school should be a tightly knit, strict-disciplined affair, self-contained, slightly differing in its hours from the School of Art, and, though drawing its inspirations from the same sources as the School of Art, differing from it completely in ideals, and we invite your criticism on the training we have propounded and on the sub-divisions of work into which it is suggested that the training should be divided.

Throughout this paper it will have been noted that we have not thought it advisable to give a place to the financial considerations inseparable from the establishment of day craft schools. Responsible authorities would quite properly want to study carefully compiled detailed information before embarking on schemes of this kind.

The cost of such establishments would differ according to the nature of the subject of instruction, the locality of the school, the manner in which such schools were grouped together, and the salaries paid to the teachers, and as to whether the school is to be a free or a fee-paying school.

We have given this matter consideration from our own standpoint, and if the subject appeals specially to any members of this Conference we should be pleased to exchange views with them.

*Paper by Mr. W. Butterworth received too late for inclusion.*

# DESIDERATA IN SECONDARY EDUCATION.

Papers to be read at
THE NORTH OF ENGLAND EDUCATION CONFERENCE,
BRADFORD.
On Friday, January 2nd, 1914.

## DESIDERATA IN SECONDARY EDUCATION.

By Mr. CYRIL NORWOOD, M.A.
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Matthew Arnold once asked the question, "What are the essential characteristics of our nation?" And answered it himself by saying, "Not certainly, an open and clear mind, not a quick and flexible intelligence." Yet quick and flexible must that intelligence be which in the course of a brief speech or of a brief paper, could hope to touch on all that is needed in the secondary education of our country. My intention is humbler: it is to dwell upon a few broad issues as simply as may be. But the words of Arnold naturally occur to my memory, because I hold that most of all in secondary education at the present time we need an open and clear mind. Buried as we all are in immediate problems as they occur one after another we lose sight of the relation of the parts to the whole, and this has been true of us for some time past; we all tend moreover to overvalue the importance of the particular work which we are doing. Before we go further or embark on ambitious policies or sweeping reforms we need first and foremost clear thinking.

In secondary, as in all other education, the demands of most vital importance are first, the characters, and secondly, the professional competence of the men and women who actually teach. It is a matter of common admission, however, that to-day in both respects the teachers are falling off, if for no other reason, at least because of this, that the supply of candidates is rapidly dwindling. In secondary education there will always be some able and ambitious persons attracted by the few prizes which it has to offer, and there will always be some drawn to it by simple love of the child, thinking little of poverty, true shepherds and pastors, through whom it comes about in all ages that the salt does not lose its savour. But neither the one class nor the other are numerous enough to man the vessel; meantime, for the ordinary man of good education, good character, good physique, and good ability, the total inducement of the profession is too low. For the rank and file there is no particular prestige, no social recognition, a salary which makes marriage a lottery, and provision for old age barely possible, and no pension. I shall not trouble you with statistics to prove these statements, for the truth of them has been notorious at any time during the past twenty years. But if it be the nation's aim in education to manufacture souls of good quality, I submit to you that it is making the blunder of sweating its labour: it has not learned that here as elsewhere, underpaid labour is dear labour; it is asking its teachers to breed men when it does not give them enough to be full men themselves. Here is our first plain issue. Until the total inducement of the profession is made sufficient, the right persons will not be forthcoming in sufficient numbers.

They will not be produced either by Regulations of the Board of Education or by conditions approved by the Teachers' Registration Council; they can only be produced by the payment of sufficient salaries.

I have mentioned the Teachers' Registration Council, and the thought of the hitherto successful issue of its labours moves me to say that if we do not think clearly and realise the paramount necessity of increased remuneration for the teacher, the very success of the Teachers' Registration Council will only make the position worse than it was before. It was laid down, and quite rightly laid down, that after December 31st, 1918, every applicant for registration must produce evidence satisfactory to the Council of having completed successfully a course of training in the principles and methods of teaching, accompanied by practice and supervision; further, this course must have extended over a period of at least one academic year. Hitherto the teaching profession, in spite of all its drawbacks, has been able to depend upon a fairly constant supply of men who, following the line of least resistance for most of their lives, have eventually found themselves schoolmasters; if they lacked the energy, luck, influence, or ability which would have enabled them to create another opening for themselves, they could always teach, for teaching required neither training nor specialisation. But now the position is to be considerably altered. Between himself and the enjoyment of his "soft option" the young man finds the barrier of one year's professional training fixed—a barrier that may be difficult to surmount by reason of expense or through loss of time, but a barrier which will check supply for this reason most certainly of all, that it will make intending candidates stop and think. They will say to themselves, "Is it worth my while to spend a year on this special training?" and a great number of them, when they consider the salaries which they may ultimately expect to earn, will answer that question in the negative.

This new Regulation, which allows us only five years' grace, makes action necessary in two directions, and in both, right action cannot fail to have far-reaching influence for good in secondary education. It makes it necessary to increase salaries or the supply of teachers will dwindle until there is a serious dearth; it makes it equally necessary to take seriously in hand the whole question of the training. It stands to reason that in education, as in everything else, the trained man must be better than the untrained; but our national position hitherto has been that while it is very important to train the Primary Teacher the Secondary Teacher does not matter at all; train the men who deal with the vast mass of the nation's children in the elementary stages, but hand over the picked children, who are to carry their education much further, to anyone you like. In no other way can one explain the figures which were quoted by Principal Griffiths at the British Association that the State elects to spend £700,000 on the training of Elementary Teachers and £5,000 on Secondary. As a matter of fact, men do not become trained at all, and there does not exist at the present time, either at the Universities or elsewhere schools large enough to train the very considerable number who will need to be trained when 1918 has run its course. Moreover, there is a fairly general feeling, among Headmasters at any rate, that the trained man, as he issues from the Training School at present, is not particularly likely to be better than the untrained. He is not by any means likely to be of necessity a reasonably good disciplinarian, and he not infrequently indicates the fact that he has been trained by airing a somewhat ostentatious indifference to professional problems and educational discussions as rather being subjects in which he has already taken a diploma and written the last word. Whether this feeling is entirely justified or not, its existence among a considerable number of the responsible men who are actually handling the Secondary Schools must be both recognised and faced. The result must clearly be that we must prepare for the reception of a greatly increased number of candidates for training, and we must by conference and by collaboration work out a system which will command general confidence and respect. We have five years to do it, and we have not a month to waste.

Speaking a little time back at the Manchester Reform Club the Lord Chancellor, premising that he was speaking neither casually nor with a light sense of responsibility, said that education was the next and the most urgent of the social problems which the Government would take up. Perhaps the sense of responsibility sat more lightly on his colleagues; perhaps it was realised that there were not many votes in a cry of educational reform, and that it was not a fit subject for a party election; at any rate, the Government seems otherwise employed. But, amid many vaguenesses, the fact emerged that education was to become national and that secondary education was to be organised and co-ordinated. No one will deny that this is our great need, but where so much is confused in aim and partial in range, it is a task of great difficulty to know even where to begin with the work of reform. Certain steps have been taken. When the Board of Education first seriously took over the administration of a large number of Secondary Schools, one contribution was made towards the creation of a national system. A fairly definite syllabus of work was imposed on all schools alike; a large number of subjects became virtually compulsory; a return in detail of the hours and minutes spent upon each subject was required and rendered. Such a step may have been necessary at the time, for the Secondary Schools were in an inefficient state. But the result was excessive uniformity and the promotion of a general feeling among the Headmasters that they need be eager neither to study the particular needs of their locality nor to express their own ideas and their own personality so much as to work closely within and up to the regulations of the Board. These regulations have since been relaxed in considerable measure, but the effect remains. Taking one town with another, one district with another, the Secondary Schools are very much alike over all the country. I submit that there is a definite need for more freedom of experiment both in curriculum and organisation: our uniformity may be efficient, and with good inspection may be kept so, perhaps improved; but the vital spark may be quenched. A little later a second contribution towards the creation of a national system was made when from all schools earning the full grant under the Regulations it was required that 25 per cent. of the pupils should be accepted without payment of fee. It has always seemed to me that this regulation was crudely conceived, and that the benefits that have resulted have not been unmixed. There did not appear to lie behind it any clear thinking covering the whole field, and in a good many cases it seems to have meant the capture of schools by one social class, to the detriment of another social class. I am all in favour of the schools of the nation being no respecters of classes, but we are not in the same social condition as certain younger countries often held up as examples, and the plain moral is that we should go slowly. I do not see what magic lies in the percentage of twenty-five that should make us conclude that it is the right number everywhere, nor do I see that any great care was taken to see that the education offered in the Secondary Schools was the sort of education that would be of most advantage to the children of those classes from whom the "free-placers" were chosen. I know of at least one school which draws the full grant from the Board, which thrives as a boarding school for the sons of gentlemen, and which takes no "free-placers" because in the distant rural wilds in which it is set none wish to go there. I know of many others in small country towns and elsewhere which have been often for centuries doing useful work for middle-class children, work often reaching the highest grade, which are now definitely reduced to the second grade, and filled with children of another social type altogether. Do not for a moment suppose that I grudge to these children access to the highest education whenever they are capable: such children form an important part of those for whom we have to provide, but still no more than a part. We are out to create from our secondary education a national system, and we have first of all to see that we have every type of school which we want, and then to provide access for all to the school which they need. We have not done that yet. What we have done, is to say: "Here are a certain number of schools mainly designed to meet the needs of middle-class education; and these particular middle-class schools shall in future be free to all."

Now, I think it is by no means so important that all classes should sit side by side in the same schools, as that the schools should be of all types; all should be efficient, and that every child should be able to get to the one which he needs. I put it to you that the State-aided Secondary Schools cover only a small part of what should be the field of national secondary education, and that however ingeniously we may staff, equip, and fill those particular schools we cannot hope to deal with our task in its full range. In the first place we end our elementary education at fourteen, or, in special cases, at thirteen years of age, and thereafter throw the product broadcast on to an industrial system which, with apparently infinite ingenuity, converts a large proportion into casual labourers, often unemployed, sometimes unemployable. That is a vast subject in itself, but a national system of secondary education as I conceive it, will have to prevent this appalling waste. If time allow I will return to the question later. In the second place we have outside the State aided Secondary Schools a very large number of private schools of extremely varying degrees of efficiency and inefficiency. They may be most valuable centres of educational experiment; more frequently I fancy they tend to approximate to that Cavendish Academy which nurtured the tender opening mind of "Kipps." In the third place there exists also a large number of boarding schools also of very varying degrees of efficiency and inefficiency, ranging from those which provide for children at a rate of pay which necessitates their being either not properly taught, or not properly fed, and very possibly neither, up to those more splendid institutions, the great Public Schools so-called, which themselves for their adequate treatment would require a paper to themselves.

I hope that I may have made it clear that in our manipulation of the State-aided Secondary Schools, as they exist to-day, we are not facing the national problem on national lines, and so far we have not, save in a very imperfect way, broken down class barriers, or developed any successful system of cross-fertilisation, so much as gone some way towards developing a "two-caste" system, consisting of those who have been educated in schools under the Board of Education, to use a convenient phrase, and those who have not. Meantime, outside these two favoured but mutually exclusive classes there is the great welter of all that part of the nation's youth which after it leaves the Elementary School receives no further education save that of the streets and of the factory. I believe that the chief need of secondary education in that national organisation which we hope to create, is to find some system great enough and wise enough to care for the case of all these classes which will make the England of the next generation.

I will speak of a few parts of this great problem as they occur to me, and first of the largest class of children now set to earn wages in their early 'teens in conditions which make continued education impossible save for the exceptional. We need to develop a system which will make a real secondary education possible for that percentage of those—whatever that percentage may be—whose outstanding ability constitutes their undeniable claim. We need to open out avenues of access to skilled trades, and I believe we shall do that best if we cause those who have it in them to become skilled craftsmen to spend half their time in the workshop and half in the Technical School. We must recognise equally that half, perhaps, of the whole great number with which we have to deal cannot become skilled craftsmen, and we must provide an unspecialised education, both mental and manual, but, above all, physical, which shall make the critical years of fourteen to eighteen a gathering ground of strength and not a seed-bed of early decay. I conceive then in this nation of my dreams a national system under which none before the age of eighteen shall work more than half-time, under which the greater number shall enjoy a training which shall not only develop the mind, but co-ordinate hand and brain and eyes and lay the foundation of good physique; and this I believe to be true secondary education. Above this general unspecialised training I would build, if I could, a system of great variety, both of Technical and Vocational Schools, in which, however, the foundation of a general culture would never be forgotten. In connection with these, the Secondary Schools, as we know them to-day, would find their place, providing for a part of the population specially fitted for them and so specially chosen. And these would themselves be of various types, shading away from the old type which makes the humanities and science its chief concern, to schools directly designed to meet the special needs of localities, and to schools so vocational in character as to approximate to the technical. I should not insist upon twenty-five per cent. or any other definite percentage of the children being "free placers"; I should make it the business of the Local Authority to see that where there was a real and reasonable demand made by the poor for any definite form of education for their children, access to that form of education should be provided without cost in all cases where the children showed their special aptitude to undergo it.

It stands to reason that secondary education in our national system would become a genuine thing and not, as it is at present too frequently, unreal and incomplete. The boy or girl who sets out to carry through a four years' course would be expected and—save for good reason shown—would be bound to complete the four years; and the same rules would apply to the seven years' course which the best schools would then supply, as they do now. We should not have the pretence of the fourteen-year-old posing as a finished product of a Secondary School nor the sixteen-year-old posing as a University undergraduate. A Secondary School as defined by the Board is a school which offers to each of its pupils a progressive course of instruction in the subjects necessary to a good general education, upon lines suitable for pupils of an age-range at least as wide as from twelve to seventeen. I had occasion lately, in the light of this definition, to take out an analysis of the ages of boys in attendance at the Secondary Schools of Somerset, Gloucester, and Bristol. I found that in Somerset twenty-seven per cent. were under twelve, in Gloucester thirty-two per cent., in Bristol nearly sixteen per cent.; on the other hand, those over sixteen in Somerset formed five per cent., in Gloucester five per cent., and in Bristol seven per cent. The figures published by the Board of Education did not permit me to discover—and perhaps they were meant not to permit me—what the drop in the percentage was as you passed from the fourteen-years-old to the fifteen-years-old, and from these again to those who were completing the full course. But I need not labour this point at an Educational Conference; if our schools are to give the education which they set out to provide, they must not be stultified in any national system by our continuing to permit in so many cases a leaving age which is barely higher, and sometimes not so high, as that which is already compulsory for those who attend the Primary Schools.

But we have cause at the present time to be anxious, not only about the education of the poorer classes, but also quite as much about the education of the middle class. A very considerable number of these, through the operation of a number of varying social motives, are being diverted to the private schools and to the cheaper boarding schools. Such schools may play a very valuable part in the system if they are efficient. It is a large "if." Some we know to be doing most useful work; some we think may be; many we have every reason to be very suspicious of. The claim I make is simple, the rule which I would enforce is drastic in its operation. Every form of school should be liable to public inspection, and that inspection should be scrupulously fair, but by no means superficial. I make the demand primarily in the interests of the children, for we have no more business to leave their minds and souls at the mercy of an educational adventurer or humbug than we have to expose their bodies to the treatment of an unqualified medical practitioner. I make the demand secondarily in the interests of the efficient private schools themselves, for this is emphatically a form of competition in which the fittest do not survive. I do not know whether the question is so acute in the North of England as it is in the South, but even in the North I should imagine that it is not an unknown thing for a person of assurance and due commercial instinct, with the aid of advertisement and a sweated and inefficient staff, to drive from the field many private schools which are attempting to do fair work for a fair return. No good school need fear inspection, and I have never yet heard any reason advanced which would cause one to hesitate for an instant to demand that there should be compulsory inspection to see that buildings were sanitary, food good, and the staff duly qualified and properly paid.

I draw to the end of my paper, but I am only too well aware how much I have omitted and how much I have scamped. When I look at our secondary education as a whole, and particularly at the portion of it which consists of the great public boarding schools, I seem to see a need, not so much of less athleticism, as of less materialism in our ideals and our outlook. Year by year as a nation we make more and we spend more; year by year this seems to be reflected in our great schools; they grow more elaborate in style and more costly to maintain. It is clear that the authorities who are responsible for them must be driven more and more to consider the ways and means by which the whole splendid establishment is to be kept up and less and less the true interests of education. They must please the clients whom they have got, they must attract others to fill their places. And the attractions offered seem to me to be increasingly material, less and less pertaining to things of the spirit. There is also a danger that right through the whole of our secondary education there may be too much of selfish ideals and that our children may go through it and learn to desire solely the material rewards which they hope to gather. Therefore I would fain fill the whole of it with the spirit of social service. I welcome the Cavendish Movement in so far as it spreads the ideal of service among old public schoolmen, but I have the doubt in the back of my mind that if the schools were wholly what they ought to be, such a special call to the best educated would not be necessary. In the ideal State social reform would not be necessary, since all the tissue would be healthy; but we are very far from that condition of well-being to-day. Some advance we might make if through all our Secondary Schools we could bring home the lesson that higher education means wider responsibilities and is itself a call to service, if all our pupils could realise the words of John Ruskin that the "highest and first law of the universe—and the other name of life—is help, and the other name of death is separation."

## DESIDERATA IN SECONDARY SCHOOLS.

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A school can be, and often is, the most important influence in shaping the life of a man or woman. Is it not well, then, that we should consider from time to time what makes a good school and what we desire most for our own?

To my mind, we need the right kind of staff, the right kind of Head, with the right relation between them and the right relations between each of these and the children.

This is true of all schools, though in this paper I am thinking specially of the new Secondary Day Schools, County and Municipal, springing up all over the country. These have their traditions to make; they seem destined to play an increasingly important part in the training of the nation's children, and it is of the first importance that they should establish the best traditions and give the right training. This will depend on the men and women working in the schools. My experience has been confined to girls' schools, and in questions of detail I have only attempted to suggest for them.

To take first the Heads: the points that matter most are that they should look on their profession as one of the noblest that can be followed, that they should care for young people, and have given proof of success in dealing with them. The higher their intellectual powers the better; their schools must, however, not be means to some other end, but the main interest of their life.

We want Heads who have not forgotten their own childhood and who can, therefore, enter into the joys and sorrows of their pupils; if they belonged in their time to the "troublesome" class of child, it may be all the better for their school. I am almost prepared to maintain that no thoroughly virtuous person should be a Head (though it is useful for the Head to have one or two on the staff) - for how can such an one understand the school-criminals' points of view?

We want Heads who have been assistants and have not forgotten the fact, and so can sympathise with their staff; in a word, no "little tin gods" who consider themselves Heads by divine right and, in some mysterious way, of different clay from parents, staff, and pupils. These autocrats, I am sorry to say, are not yet extinct. I have met some in girls' schools and gather that they are not unknown amongst the Headmasters. There cannot be hearty co-operation when the staff, for instance, feel themselves looked at from the other side of a gulf.

Governing bodies give much time to figures, reports, and building schemes; they have not all learnt yet that the human factor is the all-important one, and that more time and care given to the choosing of the right personality in their Head, will pay them in the end.

Even more important than the Head are the assistants and their relation to the Head. They, too, must be men and women of high moral character, caring for their profession. We want them as well educated as possible, as well prepared for their work as possible, and with as great a variety in previous training and experience as can be secured. Here I confess to attaching more value to the place of previous school education than to technical training. No Training College course, to my mind, helps a beginner as much as knowledge of the ways of a good school similar to the one in which he or she begins to teach. It will be a serious loss to our Municipal Secondary Schools if they come to be staffed mainly by local teachers (though a certain number on every staff will be desirable), for the North has much to teach the South and the South the North; East and West should meet in the school world, whatever poets say of the world outside, if our pupils are to get the best we can give them. Each newcomer will then bring fresh contributions to the plans for improving ways and methods under discussion at staff meetings.

I take it that every well-conducted school has staff meetings and that Head and staff discuss frankly together schemes for the future, mistakes of the past, difficulties of the present. When it is realised that the school is the concern of each one, that it is a co-operative business, then the staff have an interest in the plans they have helped to make and can carry them out in a way otherwise impossible. The senior members of a large staff should be responsible for the junior members teaching their subject, each one being left free to carry out the actual teaching as preferred, so long as the main scheme decided upon be followed. This makes for content—it is hard to teach in other people's ways—and originality is encouraged. All cannot be specialists in charge of a subject, but some bit of the school affairs should be entrusted to the others—charge of games, library, clubs, etc., etc., according to their bent. Hearing plans talked over openly and from various points of view, will help each one to keep his own bit in due proportion to the whole and to bear good-temperedly the thwarting of some cherished scheme because it cannot be fitted into place in the school mosaic. If the staff have this freedom for development, if they feel that they are trusted by the Head, if they understand and sympathise with the common aim, then conditions are favourable for the right spirit in the school.

It is, however, fatal to the peace of a community if a discordant element be introduced and it is essential to the welfare of a school that the Head should have the predominant, if not the sole, voice in choosing the staff. We are all, I think, agreed that the right of dismissal should not rest solely with the Head; but we all know, too, that some most excellent people cannot get on together and if after a time of probation, say two or three terms, incompatibility of temperament or of method be revealed, the Head should be free to move the square peg out of his daily round. This is less likely to be necessary if he has had the choosing of his helper; it is a matter of vital importance to him to get the right one and no one else will be willing to devote an equal amount of time and trouble to the quest.

One more point. However well-chosen and harmonious in working the staff may be, quality will not make up for insufficient quantity. I am told that the L.C.C. scale is one teacher to thirty children and one over; that is not enough. In the lower forms thirty may not be too many, but upper divisions suffer if a considerable amount of individual work can not be obtained for them. Children differ more and more as they get older in power of assimilation; independent thought can only be secured by having classes small enough to allow of the teachers realising how the different brains work and what treatment each one needs. It is important, too, that the elder pupils should come into close personal touch with the senior members of the staff in a way only possible with small groups. Also, for the sake of the staff, possibilities of leisure are needful if they are to keep fresh and to find time for their own reading and for outside interests. They cannot be giving out virtue from themselves all the time. Again, Local Authorities must learn to be liberal as to staff; we can do with less magnificent buildings if there is to be saving somewhere, but no good work can be expected from over-strained men and women.

What now of the pupils? How are we to obtain that good tone which we rightly rank so highly in thinking of a school? I am quite sure that the daily school prayers must be considered first. There must be a gathering of the whole school for public recognition of the spiritual side of our nature and this gathering must be absolutely reverent. I believe it should be very short, especially in day schools, for, as some children may have long distances to travel, it is unwise to keep them standing or kneeling long; also too great a strain must not be put on their attention—a very short service, but with the school in a reverent attitude. There should be no sense of hurry, no gabbling through of well-known words, and the service should not be held at a moment when the school is eager to get away, for which reason I do not hold with prayers at the end of a school morning or afternoon. We hear again and again that there is a lack of reverence in the present age—we must show in our schools, by our attitude towards school-prayers and towards the Scripture lessons, that we ourselves attach great importance to reverence. The prayers chosen should concern school life—it is useful to have a special form for examination times, for the beginning and end of term—and the hymns or short anthems should be such as suit healthy, happy creatures, not particularly troubled about their sins, but all in need of help and all owing thanks for the health and happiness which they enjoy. We cannot do without religion in our Secondary Schools; we have no religious difficulties, and if politicians will leave us alone we never shall have. It is a simple matter to let only such of the staff as wish to do so take the Scripture lessons and to let any child join another class at the time if the parent desires this. I have been teaching nearly thirty years and I do not remember half a dozen asking to be exempted, always excepting Jewesses and Roman Catholics. In my present school the elder Roman Catholics attend prayers and so do the Jewesses during almost all the year (I ask them to stay out for a time near Christmas and Easter) and I attach great importance to having thus practically the whole school worshipping together.

Secondly, the school must learn to trust the Head and the staff—then there will be no more to be said, for reverence and trust cover everything. Trust, however, only comes of knowledge. How can the children come to know the Head? In a big school she can teach little, if at all; certainly not in every form. It seems to me that one of her main tasks is to see that the children have every possible chance of coming into touch with her; the few words after prayers, notices of coming events, announcements of matches and their results, with comments on the spirit shown in victory and defeat, requests for help, praise for this and blame for that, will make the newcomers feel one with the whole and understand something of the general aims. But this is not enough; there must be personal interviews. The door of her room must be an ever-open door; new girls come to her on arrival; absentees show themselves on their return; those who want an excuse for any possible thing come to have their written request initialled for the teacher concerned to see; day by day those who are in any way troublesome enough to be "reported" by a teacher, explain what happened, being sent for if they do not come of their own accord; those who do not feel well, or have had some little accident, are seen and comforted; those who have injured school property come to confess; others, again, bring excellent home-work to be inspected, finished drawings or needlework of special merit; if there is a school dinner, that time affords a famous chance for friendly intercourse with a few more; if it be found possible to say "good-bye" to each pupil in a very short interview at the end of term, that, again, is apt to break down barriers. All this may seem to be frittering away valuable time, but it is surprising how much can be done during recreation time or in the quarter of an hour before morning and afternoon school when these visits mostly take place, and, in any case, it is time well spent. The children lose, to a great extent, their fear of the Head, and that means that they learn to tell her the truth when questioned; they learn to manage their own little bits of business without using their parents as intermediaries (by the way, it saves a very good deal of time when anxious or indignant parents do not appear with proposals or grievances, as the children do not bring in so much extraneous matter); in short, the girls learn that the Head cares about the concerns of each one. New children have to learn, and they learn astonishingly fast, never to tell tales of one another; never to attempt to get the Head to reverse the decision of the mistresses or to excuse their punishments; they find out very quickly just when they may remonstrate because "I don't think Miss So-and-so understands that I am a train girl," or "excused," or what not, "would you please explain to her?"

As between Form Mistress and child, the Head must stand back and only interfere if anything goes seriously wrong. The Form Mistress has a little school of her own within the big one; she has her form leaders with whom to confer, and as many girls as possible undertaking duties in connection with the form. She, too, must do all in her power to get to know her children; probably she teaches them several times a week, and she has them with her for a year; if she helps with their games, she has a still better chance of seeing the real child; the school social gatherings reveal much, and if she makes a point of being in her class-room in good time before school she will receive many a confidence. Here is where the need for good staffing makes itself felt; if she has scanty time at her disposal, she cannot afford to give up part of Saturday for a walk with any who can come, or have them to tea with her, and she has no energy left for running some society or other. It is not easy for her to get into touch with the home; if that can be managed, all the better. Sometimes the Head can help by arranging for her to meet a parent coming to talk over a child's work. One way and another the children must find in their Form Mistress their general referee, friend and protector.

I am not yet convinced that there is any need in Day Schools for the "house" system, borrowed by some from the big public boarding schools. The Form unit is weakened if the "house" feeling becomes strong. The main thing that appeals to me in the latter scheme is that a pupil remains in the charge of a special "tutor" throughout his school course, however often his Form Master may change; but this permanent "school-parent" can quite well, it seems to me, be the Head, so that each child can still have two allies, and there can be quite enough interest and rivalry between form and form without re-dividing the school into so-called "houses." By interesting the elder pupils in the younger ones—appointing, for instance, VI. and V. Form members to coach the junior forms in games—a feeling of unity between big and little can be established, and a very healthy rivalry between those in charge be produced. The VI. Form should do much toward keeping general order; they can be attached in turn to the mistress in charge for the day, and take their share of supervision during the dinner interval; they can manage the school sports, the teas after matches, etc., etc., learning all the time how to deal with people, an art which may prove more useful to them later than much else they devote time to at school. The more the VIth are used in little ways the better for them and the better for the school.

Knowledge of staff and Head, however, will only lead the school to confidence in them if experience proves them to be just. From the child's point of view I would put justice first amongst the necessary virtues of a teacher. We must be equable; we must not say one thing to-day and another to-morrow; overlook a fault one day and deal severely with it the next. This is half the reason that some fail to keep order—their rule is uncertain, and the young like to feel secure and bitterly resent anything unexpected, and therefore "not fair." If, however, we have made a mistake, there is no doubt about it, Heads and assistants alike, we must frankly say so. Children are most forgiving, and, in my experience, generally quite anxious to assure you that they quite understand why you thought the wrong thing. What they do not forgive and what may warp their point of view of you all their school life, is any appearance of injustice or unwillingness to listen to their side of a case. In this age of independence, it is one of the best examples that can be set them, especially, I fancy, in the North, to show that one is able to apologise without any loss of self respect.

Reverence and trust, I repeat, cover all. If the school trust the Head and the staff, it will obey willingly, and in turn the staff and Head, trusting the school which has learned this power of self-control and what is obedience but self-control?—can allow the school more and more freedom the more the better as long as the comfort of the whole be not impaired. Moral instruction as such need not be given: with a staff and Head acting justly, working together with goodwill, displaying day by day consideration for others, unselfishness and self control, steadily placing at all times "I ought" before "I want," making mistakes, it is true, but making, too, due amends for these, with this spirit in the school, example will once more prove better than precept. The school will accept these standards, will want to play the game as it sees them play it the tone we want will be there. I do not believe in moral instruction as a subject by itself, but if anyone wants an opportunity for enforcing necessary truths, apart from the scripture lesson, I would suggest turning to Kipling's Jungle Books. Till I began to read them aloud to my new-comers I did not realise how almost every moral point one wants to lay stress on is to be found there, and in how delightful a form! Reading aloud to a class, by the way, is another means for the Head of getting near to the new children: any amount of useful suggestion can be given as to school ways and standards if the powder be scattered thinly and the jam known to be acceptable to youth.

A word as to rules and punishments—the fewer the better of either. There must be directions to guide newcomers and to indicate what we consider the right conduct in different places and at different times; also, if for no other reason, to test powers of self-control and obedience. But rules should not be in existence at all unless there is some real advantage to be gained from them. Punishments are necessary evils. As far as possible they should be made automatic—I mean, definite penalties by the general agreement of the staff should follow certain faults: these penalties should be well known to the school and, if sufficiently inconvenient, will not often be incurred. It is kinder to the children to make the penalties unpleasant: it is helpful to the staff to have them fixed beforehand and, as the wisdom of the Jungle has discovered, there should be no nagging afterwards. We should, too, distinguish carefully between what may be called "school crimes," offences against school order, and graver wrong doing. It is, perhaps, the veterans in the service who are most likely to lose their sense of proportion here—school rules can become fetishes.

Have I seemed to set aside the parent? That is not my intention. If the relations between school and staff are sound, there will be no difficulty about the parents as far as interference goes: they will soon see that their children's happiness and interests are in safe hands, and be glad to leave well alone. It is not so easy to get any farther. In my experience Municipal School parents are very shy and need no little beguiling before they will come to see us. One way of getting into touch with them is by letter. It is a good plan to send to all parents of new pupils early in the first term a set of suggestions, including hints as to matters of health; mothers, I find, welcome in quite a surprising way this proof of desire to help the children. I was warned when I began this that I was doing a risky thing, but year by year I receive warm thanks from the majority and no objections have reached me. As my parents mostly find writing a difficulty, their expressions of appreciation are all the more valuable. The medical inspection, again, brings me into touch with the mothers; they are present whenever they can manage to come. This examination was resented by a few at first, in cases where treatment was suggested, but I noticed that no fuss was made when it came to the turn of a younger member of the same family—in the interval the improvement made in the elder one's health had been realised. If anyone here has not yet tried having medical inspection, I would say do not rest till you have it. You will be astonished both at what will be revealed in some cases and at the help that can be given. Again and again the reason for backwardness or poor work is found to be due to imperfect vision or to some throat trouble, and the persistently naughty or lazy girl is as likely as not to be needing medical attention. Very much can, it is true, be done by a capable gymnastics teacher zealous to improve her charges; she can inspect teeth and eyes each year when she weighs and measures the girls, and she gets then, too, a chance to give many a hint about clothing or personal cleanliness. If a medical inspection cannot be managed, this can help a good deal, as teeth and eyes account for most of the cases needing immediate treatment, but it would be better left undone than done in the wrong way, and no little tact is needed on her part, especially at first. Once recognised as the school custom, anything almost seems to be accepted by both pupils and parents; but we must move cautiously at first. It is, then, over the children's health that I believe the confidence of the parents can be quickly gained, and this is the finishing touch needed to make the happy relations that should exist in our schools.

It is because I attach such weight to all matters of health that I absolutely disapprove of mixed schools and of girls being under the care of a Headmaster. Few of the arguments for co-education seem to me to apply to Day Schools. Girls and boys develop at different rates of speed and this at different ages; if working together, one set will be kept back or the other overpressed. No man again can give as well as a woman the watchful care over manners a girl needs, and observation has convinced me that it is not altogether, as a rule, the best side of her character that is called forth by men teachers. At University age this is different. I am thinking of the child and the growing girl.

I have not attempted to touch the question of school work proper, what should be included and what left out: my concern has only been to discuss a few of the many points in the inner life of the schools which seem to me to affect very nearly their efficiency. I trust I may be pardoned for bringing forward my own experiences: the leader of a little band in an outlying part of the battlefield knows what has happened in his immediate neighbourhood and what has heartened or discouraged himself and his followers. He knows little beyond that, and that is his only contribution to the history of the campaign.

In conclusion, I repeat, what do we desire in our schools? Surely character acting upon character: men and women of high character, working with a sense of freedom, and children obeying with good will because they trust, learning high standards of honour and helpfulness from them. Such communities will prosper; they are holding fast to eternal truths; in them things true, pure, lovely and of good report will flourish and abound.

# THE COMPLETE TRAINING OF THE CHILD

Papers to be read at
THE NORTH OF ENGLAND EDUCATION CONFERENCE,
BRADFORD,
On Saturday, January 3rd, 1914.

## THE IMPORTANCE OF RELIGION IN THE TRAINING OF THE CHILD.

By the Rev. ST. J. B. WYNNE WILLSON, M.A.
(Master of Marlborough College.)

By way of preface I may make this remark. In what I am going to say I find myself using terms of Christian theology and perilously near to preaching a sermon. But it is hard to avoid doing so in a discussion of the relation of religion to the education of the child. I have also quoted the authority of the Bible, and it may be that some of those here have views as to that Book strongly at variance with my own. From such may I ask a consideration of these quotations as at least being profound human utterances?

Clearly, the aim and object of education is the full development of the various functions of a child's nature; the cutting of the rough and very precious stone and the polishing of the many facets. We who have the charge of youth recognise our responsibility for the training of body, mind, and heart, so as to produce an adult physically strong, mentally equipped, and morally sound. But these three parts do not complete the man: there is a *quartum quid;* and the discovery of its importance we owe to Paul of Tarsus. He found human nature divided into *τὸ σαεκικόν*, the flesh, psychic nature, and *τὸ ψυχικόν*, which included the intellectual and moral side. Previous to his time the psychic was the highest side recognised. He analysed humanity more accurately and perceived that the chief element in it was *τὸ πνευματικόν*, the spiritual. The "sarkic" fleshly, carnal part is what we have in common with the animal world; the psychic is what distinguishes man from the animal, and what he shares with his fellow-men, who possess intellects and conscience; the pneumatic or spiritual is what makes him akin to God: it is the germ of the divine in the human, destined to bud and blossom forth into the full growth that is the goal of mankind, when "men shall be gods and every vision true." And it is this spiritual part that is the real life. In the New Testament you will find often in the mouth of Christ and in the pages chiefly of St. John the phrase "eternal life." It is one that is constantly misunderstood. There are very few places indeed where it refers exclusively to the life of the hereafter. It is the spiritual life, the life of the eternal divine element in man, his real ego. It is a life being lived now side by side with the physic, and it goes on uninterruptedly after the dissolution of the body. "The things that are seen are temporal and the things that are unseen are eternal." *τὸ πνευματικόν* is man's real self.

In January, 1869, Tennyson uttered these splendid words: "Yes, it is true that there are moments when the flesh is nothing to me, when I feel and know the flesh to be the vision, God and the Spiritual the only real and true. Depend upon it, the spiritual is the real: it belongs to one more than the hand and the foot. You may tell me that my hand and my foot are only imaginary symbols of my existence; I could believe you; but you never, never can convince me that the I is not an eternal reality, and that the spiritual is not the true and real part of me." He uttered these words with such passionate earnestness that a solemn silence fell on all when he left the room.

Now, as I have said, the function of education is the development of the whole in all its parts. Surely any education must be sadly inadequate that omits the training of the highest and the imperishable part of a child's nature?

It is in respect of this spiritual side that our relation to God exists; it is this likeness to Him, this partaking of His nature, that permits of that communion with Him that is the real sustenance of eternal life. That is what we mean in the service of the Anglican Church when we use the phrase, "In knowledge of whom stands our eternal life."

Religion may perhaps be defined as the expression in word, life, and character of our relation to God.

Any belief in God, it seems to me, carries with it a belief in the stupendous doctrine of the Fatherhood of God; that is, His intimate, marvellous and mysterious relation to each individual life. Apart from this doctrine, I cannot conceive of the existence of a beneficent Being, and if God is not good, perish the world!

If this premise be sound, it is clear that man must be brought into relation to God; that he must learn the true way of approach and gradually realise communion. I believe that all who do not take a material view of life will go with me so far. Now, I ask, is the lesson of this tremendous function of life to be withheld from a child? Is he to receive a lop-sided development and to enjoy a moral training without acquiring any knowledge of the sanction for such morality, and the tremendous and perhaps, to him, unnatural demands of its code and without the advantage, which has been proved incalculable by human experience, of the aid to the moral life that lies in a true relation to God?

Without religion a child's highest nature is starved. The child is in many ways nearer to God than the man; he comes "trailing clouds of glory." I do not doubt his capacity for religion. Vastly more goes on in his mind than he is capable of expressing. The divine element existing in every man is not yet overlaid. He approaches life with wondering and innocent eyes which are constantly turned heavenward. By experience I know that in boys of later growth the religious instinct lies deep down. I am thankful to say boys do not talk religion much: they do not vulgarise it into pietism or religiosity, but the true feeling is there in almost every heart, but too sacred a thing to expose to view.

Never doubt a child's capacity for entering into relation with God.

Education is not the pouring of knowledge or information into narrow-necked vessels; its real function lies in the development of personality. It is personality that is force and power; it is this that leads to success judged even by low standards. I appeal to experience. Where is found the man (or woman) of real personality, of gentle but compelling force, of that power that leads, wills, and obtains aquiescence without perhaps display of authority and without friction? It is in the really religious man, who is faithful to the spirit of a noble creed. It is a solid fact that the meek do inherit the earth. The higher personality, the greater force, lie in Christ's "little child" than in the *übermensch*. The atmosphere of the New Jerusalem on earth will be self-lessness, not self-assertion. It is Christ who will win the kingdoms of the world, not Nietzsche. The domination will belong to him who lives unto God, the man of true religion.

I am no pessimist as to the progress of the world. There is more real goodness than in any other age, in spite of the surface crust of frivolity and extravagance, in spite of the cult of mammon and Silenus, in spite of unrest and upheaval. But withhold from generations as they rise the knowledge and the thought of God, deprive young minds of the Great Ideal, blind them to the Fatherhood of God, and there is no more hope for our civilisation than there was for that of Nineveh, Babylon, or Rome. Religion has played a greater part than anything else in the history of the world, because the belief in God and in the possibility of holding communion with Him and in the future life is innate in man.

Mr. J. C. Frazer, the celebrated author of "The Golden Bough," and certainly no prejudiced champion of orthodoxy, says in his book on "The Belief in Immortality," "the question whether a conscious personality survives after death has been answered by almost all races of men in the affirmative. On this point sceptical or agnostic peoples are nearly, if not wholly, unknown . . . for were the question put to the vote of the whole of mankind there can be no doubt that the 'ayes' would have it by an overwhelming majority."

"County folks who live beneath
  The shadow of the steeple;
The parson and the parson's wife,
  And mostly married people;
Youths green and happy in first love,
  So thankful for illusion;
And men caught out in what the world
  Calls guilt, in first confusion;
And almost every one, when age,
  Disease, or sorrows strike him,
Inclines to think there is a God,
  Or something very like Him."

It is this knowledge of God that makes life bearable, gives support, consolation and hope. Without religion,

"Time is often a maniac scattering dust
And Life a Fury slinging flame."

How thinking, eager men and women can propose to bring up the child without a knowledge of this primary constituent of happiness, I fail to grasp, unless—and I fear this is the point unless religious men have made their faith the battle ground of party-feeling to such a degree that the presentment of religion is no true one, but a caricature, a distorted picture of its essential point, a sight unfit for children's eyes. I firmly believe that the objection to the continuation of religious teaching is due solely to partizanship, and that without this canker there would be no suggestion except from an insignificant minority to withhold religion from the child. Without religion man's outlook on life is ultimately the blank wall. With it it is hope and peace.

As a schoolmaster who knows the effect of religion on boys and who realises that school chapel is really the centre of life and is recognised by boys to be so, if not in the present, at least in after years, I would plead passionately for the bringing up a child in the fear of God, which is the beginning of wisdom, leading to the love of God, which casteth out fear. To sacrifice the child on the altar of political partizanship or religious strife would be a crime for which the nation would pay a terrible price, even that of its very soul.

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# SOME PHYSICAL FACTORS NECESSARY IN HIGHER EDUCATION.

By Dr. A. A. Mumford
(Manchester).

## Amount of Human Material in England to be Educated.

According to the Census Report for 1901 there were 3,716,703 children under five years of age, while according to the Census Report for 1911 there were 3,499,688 children between the ages of five and fifteen; of these 10,672 had been born abroad, so that there had been a loss by death of over six per cent.

There were in 1911 some 693,000 of the age of thirteen, of whom the majority, constituting probably five-sixths of the whole, and perhaps more, are leaving Public Elementary Schools, but a small minority, which I assume to be one-sixth, are already in Secondary Schools. Of those leaving the Elementary Schools either at the age of thirteen or before, it is believed some four and a half per cent. proceed to a Secondary School and half of them receive free education there. In entering upon their Higher Education, that is, school education during adolescence, they are added to an undetermined number, which may be three times as many, who have already begun their education in preparatory Secondary Schools and who would naturally continue their education during adolescence. As a general rule it may be estimated that the majority of the former are receiving a school education somewhat in advance of their parents, while the latter group are receiving a course of school training somewhat similar to that of their parents.

As it is my duty to watch closely from the health point of view the results of this mixture of two classes of scholars, I want to ask seriously some questions about the matter. It is necessary for us to know more precisely what we are doing. Many are asking themselves whether all the ultimate effects are wholly desirable; so I do not think it would be a waste of time for us to ask ourselves what are our ultimate aims in this so-called Higher Education, in order that we may intelligently understand whether the methods we are adopting are the best for securing the aims we have in view, or should be somewhat modified so as to take some further factors into consideration, if the result is to be wholly desirable.

I desire first to draw your attention to some Public National conditions which needed to be secured before the Public National Education which we already have could be beneficial.

## The Hopes and Intentions of the Public Elementary Education Act, 1870.

Let us begin with the hopes and intentions of the Public Elementary Act of 1870. This Act was introduced by its sponsors as an effort to so cover the country with good schools as to disperse the ignorance and misery of the masses of the operative classes, for it was becoming evident that they were gathering in this country in such vast numbers as to constitute an entirely new factor in the community. Being untrained and uneducated, with no clearly defined status or stable economic position, and yet conscious of strivings for better things from within, they were a source of difficulty and danger to the orderly government of the country. The prevailing ignorance may be gathered from the fact that it was estimated by an Education Commission of 1869, when the population was less than half its present number, that there were then 2,500,000 children between the ages of six and twelve, that less than 1,000,000 were receiving any secular education at all, and that the majority were only attending schools often of the most primitive character a few days per week, or for a few weeks in the year. It was, however, claimed that there were some 3,000,000 children of all ages, including infants and adolescents, on the registers of the various Sunday Schools. Is it any wonder then that in the early stage of controversy upon National Education religious questions so largely predominated when almost the only public education provided was that of the religious communities?

I ask you next to consider how far these children of 1870 were physically prepared for any school education. To get any idea of this we need to remind ourselves of the course of events which comprised the arousing and organising of a National Public Health Conscience in this country.

## THE PUBLIC HEALTH ACTS OF 1848 AND 1875.

No sooner had the manufacturing towns obtained the right of representation in Parliament under the Reform Bill of 1832, than the needs of the towns began to find public expression in Parliament itself. A Commission was appointed in 1847 to inquire into the health conditions of various manufacturing towns. It issued an appalling report that revealed the uncontrolled and unchecked prevalence of so many serious disasters, impediments, and damages to health, that the national conscience was aroused and the Public Health Act of 1848 was passed, enabling the Government to hold inquiries, and to report on the condition of those towns which according to the return of the Registrar-General showed an excessive rate of mortality. In this way a local Health Conscience was gradually aroused in various towns and cities. Local Boards of Health were constituted and efforts made to combat the most serious dangers that beset life and health, such as bad sewerage arrangement, defective and bad water supply, etc. In 1858 the Local Government Board was constituted as a central office to supervise the increasing number of national sanitary regulations and to investigate the causes of preventable diseases.

In 1875, that is to say five years after the passing of the first Public Elementary Education Act, another Public Health Act was passed. This compelled the Local Authorities to take active cognisance of their own health condition, and, though the Central Authority retained its supervising power, the Local Authority was compelled to appoint a legally qualified medical man to advise them, the first of his duties being to inform himself, as far as practicable, of all influences affecting, or threatening to affect, injuriously the public health within the district. The principal questions with which he had to concern himself were the condition of houses, the water supply, the drainage, sewerage, and scavenging of the district. The conditions of the factories, workshop, bakehouse, slaughter house, etc., and also to draw up and tabulate such vital statistics as would show the general health or otherwise of the district. As soon as these matters were adequately considered, and the results of neglecting them laid bare, it became evident that, in the interests of self-protec-

"For every case of death from infectious disease
in young children that there are 4 or 5
cases of serious illness from infection and disease [illegible]

tion, public action must be taken. Adequate provision for isolating, treating, or preventing the various infective diseases soon became common, and this better provision not only diminished the mortality from infectious disease, but also diminished the actual amount of sickness and disability in the district.

As the Infectious diseases always exact their heaviest toll, both as regards sickness and mortality, from childhood, it was naturally the period of childhood that first received the benefit of the improved state of affairs. Less children were destroyed during school life and a less number of children were invalided. After forty years of sanitary inspection and control we find that the preventible diseases of small-pox, typhoid fever, scarlatina, and, to a less extent, diphtheria have been brought under control, though the equally preventible diseases, measles, whooping cough, pneumonia, and tuberculosis, are still allowed to continue their slaughter of nearly one-tenth of the school children of our State. The figures available for consideration of the amount of these latter diseases are of limited value only, since they concern the fatal cases alone, and we have no means of estimating the extent to which the non-fatal but still damaging and disabling forms prevail, and interfere, both temporarily and permanently, with health and vigour during school life.

It is the experience of most Medical Officers of Public Elementary Schools that the greater proportion of disability, inefficiency, and backwardness of school children is due to the combined effects of insufficient nourishment, insufficient sleep, and incomplete recovery from many of these still prevailing but preventible diseases. Innate mental deficiency accounts for less than 2 per cent. of the backwardness; incompletely cured disease from 30 per cent. to 50 per cent. of it.

I have brought this brief survey of National Health and Education before your notice as I wish to establish the position that the conditions which were necessary for the proper elementary education of the children of the nation are by no means separable from the conditions which are required for the efficiency of proper secondary education during adolescence. They give us the clue to the first requisites of it. Education during adolescence demands a far higher standard and physique than does elementary education during childhood.

### SOME GATHERING DOUBTS AS TO THE BENEFIT OF SCHOOL EDUCATION FOR ALL CHILDREN OF THE WORKING CLASSES. THE AGITATION IN 1883 ABOUT OVER-PRESSURE IN SCHOOLS.

*Over-pressure in Schools.*—The progress of national elementary education was not without its critics. In the early 'eighties there arose a great outcry against the health condition of school children on the Continent. This was reflected in the English Parliament and the Press. The Government appointed Sir James Crichton Browne to investigate the matter. He issued a scathingly condemnatory report of the effects of education upon children. Unfortunately he overstated his case, and did not discriminate between the various factors affecting the health of children out of school and the effect of education itself, but put down to school pressure the effect of numerous insanitary conditions, having little or no necessary concern with school life, which, though gradually coming under control, were still operative. He did not sufficiently point out that the causes of ill-health were not the exercising of the mind during school age, but the unwise and unsuitable circumstances in which children were brought up out of the school, viz., the

"If we can [illegible]

badly ventilated rooms in which they lived and worked, the insufficiency of their food, their incomplete recovery from acute illness, and the prevalence of diseases of the eye, ear, etc. The ultimate result of the agitation was that several fresh clauses were added to the educational code, more attention was paid to physical conditions of young life, and the ground work was laid for the medical inspection to follow later. The question was again raised at the International Health Conference, 1884, when Sir Joseph Fayrer, in particular, dwelt upon the strain imposed by higher education upon adolescents of all classes of the community.

### THE IMPROVED PHYSIQUE OF THE MODERN ADOLESCENT AS SHOWN BY MEASUREMENTS AT THE MANCHESTER GRAMMAR SCHOOL.

By a very complete analysis of the measurements of the boys taken in the gymnasium of the Manchester Grammar School and recorded in the gymnasium registers, which have been in use from 1881, it has been possible to make a comparison of the scholars of to-day with those of thirty years ago. It is very remarkable that although there is a tendency for the children of the upper middle class not to attend a public day school at all, but to receive their education at a so-called Public Boarding School, the place of the upper middle class boys being taken by an increase in the number of boys from the Public Elementary Day Schools, so that at least two-thirds of the boys to-day come from this source, yet the Manchester Grammar School boy of to-day is better grown and stronger than his predecessor of a generation ago, the improvement amounting to an increase corresponding to six to nine months' growth. That is to say, the boy who attends the school to-day is about six to nine months ahead of the boy who attended a generation ago.

*Summary of differences in physical development of the boys at the Manchester Grammar School during a period 1881-86, as compared with a period 1905-10.*

| AGE | HEIGHT IN INCHES | | | WEIGHT IN LBS | | | CHEST GIRTH IN INCHES | | | FOREARM IN INCHES | | | UPPER ARM IN INCHES | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1881-86 | 1905-10 | Difference | 1881-86 | 1905-10 | Difference | 1881-86 | 1905-10 | Difference | 1881-86 | 1905-10 | Difference | 1881-86 | 1905-10 | Difference |
| 10-11 | 53.2 | 52.94 | -0.26 | 65.3 | 65.59 | +0.29 | 24.9 | 24.68 | -0.22 | 7.63 | 7.61 | -0.02 | 7.81 | 7.60 | -0.21 |
| 11-12 | 54.38 | 54.99 | +0.61 | 69.28 | 72.05 | +2.77 | 25.21 | 25.38 | +0.17 | 7.79 | 7.79 | equal | 7.99 | 7.91 | -0.08 |
| 12-13 | 55.94 | 56.70 | +0.76 | 74.4 | 77.3 | +2.9 | 25.92 | 25.93 | +0.01 | 7.96 | 7.99 | +0.03 | 8.27 | 8.11 | -0.16 |
| 13-14 | 57.77 | 58.84 | +1.07 | 81.01 | 85.47 | +4.46 | 26.72 | 27.05 | +0.33 | 8.28 | 8.29 | +0.01 | 8.63 | 8.49 | -0.14 |
| 14-15 | 59.82 | 61.08 | +1.26 | 89.99 | 95.15 | +5.16 | 27.71 | 28.17 | +0.46 | 8.63 | 8.69 | +0.06 | 9.1 | 8.97 | -0.13 |
| 15-16 | 62.16 | 63.4 | +1.24 | 101.41 | 105.9 | +4.49 | 29.26 | 29.56 | +0.30 | 9.08 | 9.09 | +0.01 | 9.67 | 9.48 | -0.19 |
| 16-17 | 63.84 | 65.35 | +1.51 | 109.65 | 117.9 | +8.25 | 30.06 | 30.91 | +0.85 | 9.413 | 9.53 | +0.117 | 10.19 | 10.13 | -0.06 |
| 17-18 | 65.88 | 66.47 | +0.59 | 119.36 | 124.84 | +5.48 | 31.3 | 31.85 | +0.55 | 9.80 | 9.79 | -0.01 | 10.76 | 10.47 | -0.29 |

A plus sign indicates an improvement. A minus sign a deterioration. Averages only are compared. Ages 9-10, 18-19 and 19-20 left out, as the figures are too few to afford very reliable results. Figures are to be found in the detailed analyses published in Manchester Literary and Philosophical Society's 1912 Transactions.

Statistics of bodily growth have been so extensively compiled, and so thoroughly examined in all parts of the country, that there can be no doubt that the general conditions of health which accompany the boy's physical growth also accompanies the boy's mental growth. They depend partly on the positive effect of the stimulating influences of good food, good housing, [illegible] free places, mentally [illegible] of physically, the cream of the [illegible]

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good clothing, and partly on the negative effect of freedom from damaging infectious disease during early life. Though it would be foolish to say that the taller and better grown the boy, the better brain would he possess, yet it is quite safe to say that, where well-grown boys and girls abound, good brains and good capacity also abound, and that where ill-grown boys and girls abound, there also abound poor brains and poor mental capacity. I find that of every 100 boys at the Manchester Grammar School who are retarded one year or more in their work, 83 per cent. show evidence of damaging disease in early infantile life.

Let us now pass on to the mixing of the classes of scholars in secondary education.

### THE HOPES AND INTENTIONS OF THE EDUCATION ACT OF 1902.

The Education Act of 1902 has proved a statesmanlike endeavour to link up Primary and Secondary Schools that there shall be a direct ladder extending from the Elementary School to the University. It has enabled not a few scholars from the best Elementary Schools to make such an ascent, with benefit to themselves as well as to the general community. It would prove of increasing value if certain essential physical and social conditions could be secured for all scholars entering upon school education during adolescence.

### THE PRESENT MATERIAL OF THE PUBLIC ELEMENTARY SCHOOLS.

The increased use of Public Elementary Schools by the better type of children of the lower middle class has led to the steady disappearance of many ill-equipped small private schools, and a consequent raising of educational attainment of the children. It is no longer generally considered a social injury for the children of the lower middle classes to attend Public Elementary Schools, which were apparently first erected for the children of the operative classes. They frequent these in large numbers, and often coming from good homes, with the possibility of some intellectual interests, and, being less liable to damage by acute infectious disease in early life, make up some of the best material which is going through our growing National system of Higher Education.

In this way the Education Act of 1902 endeavours to carry out the evident desire of the educational reformers of the sixteenth century, who founded Grammar Schools where there should be an admixture of boys of good brains from all classes of the community. The ultimate effect of the 1902 Act no doubt varies in different districts. Where there is such competition for secondary scholarships offered as suffices to secure a large number of mentally and physically well-prepared candidates, it generally happens that the successful ones are above the average in physique as well as in brains. This is certainly the case with the boys in the Manchester Grammar School. When, however, the candidates are comparatively few, and many are ill-prepared physically as well as mentally, the choice will naturally be both more restricted and more unsatisfactory.

### SOME EDUCATIONAL IDEALS IN THE PRESENT DAY.

The ultimate purpose of secondary education is not often kept clearly in view by the scholar or the parent, or even, perhaps, by the teacher. The nation itself has not quite decided what is the object in view. The common impression is that the object of education is to help a boy to get on in the world instead of preparing him to take his place in the community and help others. State organisation of education is, after all, but the lagging expression of public opinion, and after forty years of experiment in State education we are often faced with the miserable result of a purposeless education.

One reason why so much education effort is futile is that discussion about methods and subjects has occupied exclusive space. The privately managed schools of a past generation succeeded because they were planned to supply the special demand of middle class parents. Many such privately managed schools do so now.

### HUXLEY AND THE FIRST LONDON SCHOOL BOARD.

I think the four points in Huxley's election address when he was a candidate for a place on the first London School Board are difficult to beat :

Physical Training and Drill as part of the regular business of a school.

Instruction of girls in elements of household work and domestic economy.

Training in elementary laws of conduct to know and to love the highest good.

Intellectual training as the means of acquiring knowledge both for pleasure and for improvement.

To provide opportunity for all capable of benefiting by it, and to foster all special intellectual ability.

Nor is Emerson's aim yet fulfilled :

"We teach boys to be such men as we are. We do not teach them to aspire to do all they can. We do not give them a training as if we believed in their noble nature ; we scarcely educate their bodies ; we do not train the eye and the hand. We exercise their understanding to the apprehension and comparison of some facts, to a skill in numbers, in words. We aim to make accountants, engineers, attorneys, but not to make able, earnest, great-hearted men."

### WHY CHILDREN FROM PUBLIC ELEMENTARY SCHOOLS SEEK SECONDARY EDUCATION.

The next question we need to ask is "Why is secondary education being sought in England by scholars from Elementary Schools?" Is it sought because it is desirable for itself or for the simple reason that it increases the prospect of gaining a living? The Annual Report of the Board of Education for 1912 states that some 50 per cent. of those entering from Primary Schools are destined for the teaching profession, so that probably 10·12 per cent. of the secondary education in this country is undertaken for purposes of apprenticeship for livelihood.

This contrasts remarkably with the condition of affairs in Scotland, for while in England 1 in 22 children leaving Public Elementary Schools enter centres for higher education, in Scotland 1 in 7 does so. The Scottish adolescent is not only a better educated individual, but he more fully realises the value of higher education.

### NEED FOR STANDARDS OF PHYSICAL STAMINA FOR ADOLESCENTS UNDERGOING SECONDARY EDUCATION.

Theoretically, higher education, i.e., formal education during adolescence, should be provided for and free to all, like the sun and air. Practically, many are so unfit in physique, and ill prepared by previous home and other conditions, that they are more likely to be injured than benefited by a prolonged

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course of indoor study after thirteen, lasting over three or four years or even more. Only a few, owing largely to previous training and previous health are capable of fully benefiting by it. It is doubtful if, under present conditions, as many as 7 per cent. of the total school population are capable of really benefiting by a course of intellectual study, as we know it, extending throughout adolescence. Higher education demands effort from all and implies strain.

The present methods by which the *personnel* of a Secondary Day School is obtained are partly those of attraction reinforced by social customs and habits of the middle-classes and partly by a system of selection by examination of boys who are supposed to be fit for secondary education. There are some disadvantages in the exclusive use of either method, but in the past the former and in the present the latter have served as a good working basis, so that we can review the result. The natural extension to these methods involves the creation and acceptance of certain standards of physique or powers of endurance.

Moreover, the present provision for public higher education, though perhaps equal to the present demand, is still limited. Hence there must be selection, and this involves discrimination, either by attraction when the provision is in excess of the demand, or by competitive examination when the candidates are too numerous.

If school life is to be extended to sixteen or seventeen, as it should be in any properly organised community, there would need to be an enormous extension of handicraft work and occupational training instead of language and intellectual training. This, I think, is the character of much of the higher education in America.

There is no available knowledge by which we could estimate what the school population would be like if freed from early disease, and properly fed and housed from early life. We know each progressive wave of advancing national health has shown that increased attention to health does not arrest the influence of selection, but ensures that such selection as occurs should take place on a more intelligent and more humane plane. The better the soil in which the seeds of human life are grown, the fuller the manifestation of the powers of life and the greater the capacity for favourable variation.

As to the advisability of providing for free secondary education for all, I am not at present convinced, but I am well satisfied that the selection of the most intelligent and the most earnest, by means of enlightened examination, and the providing them with opportunity to continue their growth on lines in which they have already shown power, is as scientific as it is humane. Still greater success attends the selective method where physical health and vigour are considered, than when mental acuteness and attainment are alone considered.

Nor is the connection between health and education less intimate when we examine private and semi-private institutions. It is true that, owing to habits of distorted and one-sided development, we have allowed an unnatural separation of the interests of the individual from those of the community to grow up, or rather, we have failed to rightfully correlate them. We have thought that because a particular child may recover from the debility of an infective illness, that no permanent interference with growing structures has occurred. The career of the private school boy, as well as the Public Elementary school boy is often married or impaired by some early disease which might have been prevented, though the wider resources of the wealthier citizen may do more to control these effects in the one case than in the other.

### THE HOMES NECESSARY FOR SECONDARY EDUCATION.

Next let me speak of the home conditions desirable and generally though not invariably necessary if secondary education is to be beneficial. The conditions that seem to me to most require attention are good food, some measure of privacy and quiet study, adequate sleep, opportunity for relaxation and recreation, and, most important of all, good moral training, which, to be of any use, needs to be accompanied by example, for how often do we parents expect performance in our children we do not exact from ourselves? Hereditary endowment of intelligence is also a necessity, though, in my opinion, our "regulation" methods of education are as often engaged in suppressing as in encouraging innate endowment. If we want to increase the 4½ per cent. of children passing from elementary to higher education, I think the first requisite is to improve the home, and widen the interests and outlook of the parents. Was it a pure chance that the educational revival in the early nineteenth century received its force from the religious revival of the eighteenth, and that the religious element gave dignity and power to the economic expansion of this period of national growth? Has this any lesson for us to-day?

### HIGHER EDUCATION SHOULD BE JUDGED BY ITS SUCCESS IN MAKING THOUGHTFUL AND PUBLIC-SPIRITED CITIZENS, NOT MERE SCHOLARS.

The tests and rewards for school attainments under present conditions offer a very illusive and often an actually misleading guide to civic worth. If higher education is to afford, in any real sense, a higher preparation for life than that afforded by elementary education, it is evident that some training in responsibility for public, as well as for private, health should be a very integral part of it. Among Elementary School children it may be enough to impress the facts of personal hygiene, such as habits of cleanliness, etc. The scholars are of too immature an age to receive more. But I believe this is quite insufficient teaching for those who enjoy the advantage of more advanced education. They will be called upon to occupy the more responsible positions in the community, and I hold that the Secondary School fails in its training for citizenship, unless it both arouses a sense of deep social responsibility, and provides the means by which this sense can be widely informed, not merely of the bare facts of personal physiology, but the application of the laws of healthy communal life. In this way part of the duties of a school is, at the appropriate time, to develop an enlightened and effective health conscience, both public and private. By "enlightened health conscience" I mean one in which knowledge is the predecessor and director of action.

The teaching of physiological fact should be accompanied by a practical application in such ambulance work as the handling of a stretcher, and in learning to perform artificial respiration in the case of the apparently drowned, and of general healthy living. The usual annual prize-giving at a Public School is a sorry show to those who look to the school to advance citizenship. There is no public commendation or realisation of a sense of responsibility for health management and control, or of the wider outlook upon life which follows upon each successive mastery of circumstances. With the greater power of each succeeding school year, greater opportunties occur, and greater responsibilities should be accepted. Lastly, the whole purpose of secondary education must be kept clearly in view by scholars, parents, and teachers alike, viz., use of the glorious period of adolescence for arousing ideals that shall raise the whole level of social and national life; so that we learn to pay more attention to our Duties than to our Rights and, thanks to our higher education, we enter on a higher plane of existence.

"Yet I doubt not through the ages one increasing purpose runs,
"And the thoughts of men are widened with the process of the suns."—TENNYSON.

Extract from the Report of the Director of Education to the Bradford Education Committee upon his visit to Germany in 1912.

## JACQUES-DALCROZE COLLEGE,

## HELLERAU, DRESDEN.

With a card of introduction from Sir George Newman to the Director, Dr. Döhrn, I had the privilege of visiting this College and seeing some of the work. Only last year the College was transferred to Dresden after several years of successful work at Geneva. It is situated in the Hellerau Garden City, some four miles outside Dresden.

The buildings are quite modern and consist of lecture rooms, assembly halls, studios, hostels for the students, and houses for the professors, all built in the style now in vogue in Garden Cities, and very artistically decorated.

The studies include rhythmic exercises, sight singing, ear training, harmony, improvization, breathing and gymnastics.

There are three distinct courses of study:—

I. The Normal.—Two years' course for students preparing for the Teachers' Diploma, which cover twenty-five hours of class work per week, apportioned as follows:—

Rhythmic Gymnastics, 5 hours; Ear-training (Solfège), 5 hours; Improvization (Harmony), 2 hours; Anatomy, 1 hour; Choral Singing, 2 hours; Plastic (Group practice), 4 hours; Gymnastics, 3 hours (half-hour every morning); Obligatory attendance at lessons of other classes, 3 hours.

II. The Dance and Theatre Course.—Similar, except that these students take four hours' Dancing instead of Improvization.

III. The "Hospitanten" (Outsiders') Course for those who desire only their personal education.

Holiday courses (open only to past students of the College) are held during August.

The actual fees are about £40 per year. Hostel accommodation from £6 to £8 per month.

Expressed briefly, the aims of the school are as follows:—

The movements of the arms are *metrical*, that is, there are as many distinct movements as there are beats in a measure. The strong beat of the measure is called the *thesis*, and is the downward movement of the arms. The movements of the lower limbs follow the course of the rhythmical structure itself, and are adapted to represent *duration*. In this way, semibreves, minims, crochets, etc., are indicated, and it is claimed (1) That sensibility to rhythm is fully and permanently attained. All the sensory systems become permeated with a sensibility which renders the entire body aesthetically responsive to rhythm and gives the individual a critical power of listening; (2) That a clearer understanding is gained of musical notation and of the various kinds of notes and rests; (3) That the exercises call into play a very large number of muscles simultaneously; (4) That the powers of observation and response are greatly quickened. (In this lies the great educational value of the system.)

Besides inspecting the buildings and learning the aims of the College from its enthusiastic Director, I saw two classes of Elementary School children and one of Teachers. The former were from the Elementary School of the Garden City, and were used as "material" for practice and demonstration of methods. Elementary and Secondary Schools in connection with the College are being contemplated. The Teachers' Class consisted of students taking a sort of post-graduate or special course.

## EURHYTHMICS IN EDUCATION.

By Emile Jacques-Dalcroze.

(Condensed English Translation of a Lecture.)

My method is an attempt to give self-knowledge to the pupil by special means; upon this knowledge I ground all my work.

To the old saying "know thyself" I give a new meaning; for my pupils commence by learning to control their bodies; what exactly I mean by this you will understand to some extent after seeing the exercises. An active participation in them would prove to you how little we control our bodies, how much they control us.

Rhythmic Gymnastics, with its wealth of exercises capable of infinite variation not only as regards movements and combinations of movements, but also as regards degree of duration, of speed, of energy, gives the pupil, first, a clear understanding of his physical limitations, and, secondly, of the means of escape from these limitations by attaining physical self-control, and thereby absolute self-control. All self-control must begin with control of the body, not for the sake of the body (a mistake leading to excess in athletics) but for the sake of the higher self, the central being within, of which indeed it is the touchstone.

The body is our instrument in this life, one which we must keep pure and strong, if we are to live completely, to realize life, to master it.

Rhythmic Gymnastics has a value, educational and hygienic, which it is difficult to estimate. Half play, half work, it attains the most important result of leading us to concentrate our forces of consciousness, to use body and intelligence together, to strengthen and develop the one through the other, and accustoms us to work at all times with full energy, true to the principle "a thing worth doing is worth doing well."

Some may object that my method can be nothing but a simple system of arm and leg movements to music, designed as a help in the study of music; a system perhaps healthful, perhaps novel, but not otherwise remarkable.

It is true that the method is based on simple movements and, ten or twelve years ago, at the commencement of my experiments, I looked upon it as merely a technical aid to correcting certain faults in rhythm among my music pupils. Later, as the method developed, parents and teachers told me that the exercises benefited the children, not only in their music, but also in their whole activity. Educationists and psychologists noted the same effect, and, above all, my pupils themselves began to realize that they were not merely being taught music, but were being generally educated, that they were undergoing psycho-physical transformations which widened their horizon. Students came for various reasons—some to obtain the teaching diploma, others to become conductors, others to prepare for the stage; each of these coming to train for his special object soon realized that involuntarily and unconsciously he had put his whole being to school.

These results are due entirely to the fact that the method *educates from within*, developing the sense for music, innate in all mankind, and is based on the educative value of rhythm, of that force which rules in all manifestations of life, beginning with the first heart beat; and these results justify my contention that rhythmic exercises should not only be the basis of education in music, but should have an important part in the general training of all children.

The objection may be made that the results of the method from the point of view of the general education of the child are too general, too indefinite for accurate estimation. For the moment that is true, but it may not be long before definite psychological experiment gives convincing proof that my claims are justified.

As regards music teaching, for which the method was specially designed, the position is quite different; here results are immediate and convincing. In this connection I had an interesting experience at Geneva in the summer of last year. Two years before, I had left some 250 to 300 children to be taught by teachers trained by me. I was asked to give these children a few lessons and was more than astonished at the progress they had made. Among so many it is impossible for all to be gifted, yet these children after this study—generally two lessons per week—for two or three years, were able to express the most difficult rhythms, to decipher and sing the most complicated chords, and to read melodies which would have been difficult to many a conservatoire student. These children, when they begin the study of an instrument, generally tedious and painful, will have no difficulties. They begin instrumental work with the same advantages as musically gifted people, who are already capable of forming mental images of time and note values. Finger work is child's play to such, and the music lessons become a pleasure both to teacher and pupil; and this result is obtained without any dry teaching forced on the child.

At Hellerau no pressure is used, yet the children attend their lessons regularly of their own accord and take the greatest pleasure in them.

At a time when the air is full of novel ideas and of talk of reforms in education, it is inevitable that people should be critical, even sceptical, of what is new, but remember that in all things actual testing is better than any amount of theory; therefore during the exercises which are to follow I beg you to pay attention not only to each exercise but especially to the *way* in which it is done. If you will try to do them yourselves in thought you will obtain some experience of the brain processes involved, and will, I am sure, be convinced of their value. Perhaps you will be induced to study them actively for yourselves; then I am sure, you will become supporters of my ideas and help to make them known.

Ten years' work with my method has firmly convinced me that rhythmic exercises must eventually have a part in every form of education, and all who have given careful attention to the subject agree with me. Rarely has anyone dropped the study of Eurhythmics after once beginning; on the other hand it constantly happens that students come to me for one year's training but remain longer, and in my classes for amateurs I have the pleasure of seeing pupils, adults and children, return term after term, because they feel that this work is slowly but steadily helping them to develop.

# EUGENICS AND SEX TRAINING.

A Paper to be read at
THE NORTH OF ENGLAND EDUCATION CONFERENCE,
BRADFORD.
On Saturday, January 3rd, 1914.

## EUGENICS AND SEX TRAINING.

Notes of Paper to be read
By Dr. JOHN D'EWART, M.B., M.R.C.S., L.R.C.P.

Two factors in individual progress—
Heredity and Environment.

A. Rise of Environment Factor.

Rousseau: "Contrat Social," 1762.
Lamarck:
Owen: "Character made by circumstances."
Darwin: "Origin of Species," 1859.

Effects—on Politics, e.g., American Independence.
French Revolution.
Reform movement.

On Social Life, e.g., Slavery.
Temperance.
Education.
Sanitation.
Housing.

B. Rise of Heredity Factor.

Galton: Eugenics is the study of agencies under social control that may improve or impair the RACIAL qualities of future generations either physically or mentally.

Examples.—Andalusian fowl; blue eyes; red heads; diseases; mental deficiency.

How Eugenics helps teachers—
Mental Deficiency Act.
Improved Physique.
Improved Mental Power.

How Teachers may help Eugenics and therefore the Race
Eugenic Ideal.
Higher Morality.

## SEX-EDUCATION AND EUGENIC TRAINING IN THE SCHOOL—(A SUMMARY).

By NORAH H. MARCH, B.Sc.
(Lecturer, L.C.C. Day Training College, Clapham).

Before offering for consideration any suggestions for methods of carrying out sex instruction in the school, it is advisable to see what branches of instruction and training sex-education may be held to comprise. To look narrowly at the question as of sex hygiene only, is to belittle its object and to fail in appreciation of its possibilities. We must recognise that the scope of sex-education is wide, that its phases are many, that it is not a question concerning the individual alone, but that it has its direct bearing upon the social relationship, and that it plays a part in racial hygiene. Nor is it a question of establishing a knowledge of physical facts only; the moral, spiritual, and emotional sides of the sex life must be recognised by anyone who would undertake the work of instructing the young in the laws of life.

Such instruction should seek to give a knowledge of physical facts involved in those processes by which life is transmitted from one generation to another. It should also seek to convey the knowledge that the laws of reproduction govern plant and animal life, including man, recognising the fact that certain general principles hold good for all organic life, and that there are certain powers which man shares with animal life. Yet in many ways man differs from animal life, has different opportunities afforded him and different responsibilities placed before him; in fact, while animal life is guided by the sexual impulse, that same impulse is under the responsible control of man.

As a result of our past policy, children have gained knowledge of the means by which the human race is perpetuated, but they have gained it in such a way that it has only been partial in supply, promiscuously obtained and very often the vocabulary they have received in connection with it is very undesirable, often vulgar and even obscene.

To give this knowledge of the physical facts of the reproductive processes will perhaps be considered the hardest part of sex-education to deal with, but once obtained and in suitable terminology the way is paved for later reference such as would be required in the other phases of sex-education.

Sex-education should embody some instruction in personal sex hygiene. In early life children may develop unhealthy habits, and wise counsel will be necessary to help them to overcome these habits. Then, too, the hygiene of sex should be calculated to help girls and boys in meeting the changes which manifest themselves on the approach of puberty. They should not be left to meet these changes without any forewarning, but should be prepared for their advent. Not only should they be prepared for their advent, but they should know of the relation these changes bear to their future responsibilities as men and women. Sex hygiene should be considered as leading to health of the racial organs and avoidance of sex malpractice.

The two foregoing phases of sex-education may be considered to have a purely practical aim, but, though very important and, indeed, essential, they do not constitute the whole of sex-education; the intimate relations of moral training and of character-building to the life of sex must be thoroughly appreciated in our plans for sex-education. Boys and girls should understand why the racial instinct is given to man, how to direct it towards that which is highest in attainment, and how to control it till the time comes for its legitimate exercise. They should know that it is possible to transmute the energy of sex into other forms of bodily and mental energy, so that the racial energy may be not wasted but conserved, and that the human being is better, not worse, for this conservation.

The sex life is one of many complexities, very often of trying emotional experience. It brings with it, too, many changes of a psychic nature. Professor Earl Barnes points out how important it is that, in evolving any plans for instruction of boys and girls in this way, we should not neglect the fact of the pleasures of sex. Nor, too, should we hesitate to recognise that the spiritual nature can cast its influence over the sex life, that the trinity—body, soul, and spirit—is as real in this domain of experience as any other. The time of adolescence is the time when the spiritual beauty of the sex ideal may be well implanted.

Sex-instruction has also its social aspect, and should seek to give that knowledge of social experience and of social conditions which shall contribute towards social hygiene, so that, in short, it should seek to inculcate a high sense of social responsibility.

But the ultimate aim of sex-education will be attained when we consider its application in education for parenthood—that is what we may call the eugenic or racial responsibility of the individual. It is only by endeavouring to train boys and girls along lines of education such as shall make them, when their turn comes, become fit and worthy parents, that we shall aid the great cause of race regeneration. We should seek to instil that high ideal of parenthood that shall unconsciously mould the choice towards that which is best and fittest in every sense of the word.

Having reviewed what are to be the aims and objects of sex-education, let us pass to a consideration of how these aims may be achieved through the school. One must recognise that in the school we have the advantage of good pedagogical methods. We have the children, too, for so many of their waking hours per day, and, moreover, they come to school in that frame of mind which is more or less receptive of instruction. They know they come to school to learn something, and whatever they get from their teachers they regard as something they are supposed to learn. If, then, an effort is made to widen the treatment of school subjects so that they may embrace sex-education, there will be nothing unnatural in this, so far as the child is concerned, to stir any feelings of revolt against it. One recognises, of course, that ideally the more intimate phases of sex education should be the privilege of the parent. Many parents are beginning to realise that when they leave this side of life untouched upon in their confidence with their children they are making a great mistake, and they are anxious to do something to avoid this error, but do not know how to do it. Other parents have never considered the need for a deeper appreciation of their duties towards their children. Others, again, have had their lives so coloured by unfortunate experience that they can never overcome the association of degradation and could not be expected to give their children help and valuable, uplifting counsel. Such children would be peculiarly dependent upon the school for any raising of their standard, so that it should attain a higher level than that of their parents.

It would be possible to do a great deal in the school utilising the subjects that are already in the curriculum. These subjects, in the hands of a wise, capable teacher who thoroughly understands the temptations that may lie before his pupils, and who, moreover, has a sympathetic insight into child life and into the out-of-school environment, would afford many opportunities for giving the knowledge we wish to convey, and for implanting those ideals which illuminate sex-education.

A tactful arrangement of nature study, beginning in the Infants' school, will serve to create a background for reference by means of which a knowledge of the reproductive processes involved in plant and animal life shall gradually filter its way into the child's mind. This will be done by including the study of the reproductive processes in a general study of plant and animal types.

Hitherto, it has, generally speaking, been the custom to avoid these processes in dealing with animal life, but, by beginning with simple types, using suitable and simple terminology, it is possible to explain the reproductive processes quite clearly and adequately to the needs of the child's growing mentality.

Nature study would so come to play an important part in the school curriculum, and should not be limited to the early years of school life only. It should serve as a gradual approach towards physiology and hygiene; in fact, in many ways these two subjects should be considered as applied biology.

Nature work, carried on systematically, facilitated by the growing of plants and the rearing of animals under the continued observation of the teacher and class, yields many evidences of the working of heredity, and through it children are gradually led to realise that certain characteristics of the parents are handed on to their offspring.

There are many other ways in which the biological approach to sex-enlightenment may be utilised in preparation of a background; it provides, for instance, acquaintance with maternal care, home-building, eggs and their development, care of racial organs, etc.

In the Secondary School, where botany and often zoology are taught as a part of the definite scheme of work, opportunity would be afforded to make a more direct acquaintance with the detailed nature of the fertilising process. The nature of the egg-cell, of the sperm, of impregnation, the early stages of development—that is, the embryological processes—can be demonstrated by using suitable plant and animal types, and in this way a deeper and more thorough foundation for a better understanding of the means by which human life is transmitted would be laid, and, moreover, it would be possible to pave the way for more definite teaching as to some of the laws of heredity.

Physiology and hygiene, or some form of "health" lessons, find a place in the scheme of work of most schools, and may be so treated as to include personal hygiene, some simple instruction on social hygiene, and may serve to implant those guiding principles of conduct which shall make for racial hygiene. A better knowledge of the venereal diseases has been largely contributary to the demand for definite instruction for boys and girls adolescents—in sex hygiene, and with the foregoing preparation of nature study it would be quite possible to extend the physiology and hygiene course so as to include the physiology and hygiene of sex, and in this way to give such instruction as shall serve to maintain the racial organs in health and so as to prevent the development of unhealthy sex practices. Not only that, but an extension of the treatment of infectious diseases might be made so as to include in the list of social diseases these which we realise are playing such a great part in racial deterioration.

Literature, History, Human Geography, Bible Knowledge, may each be utilised for the purpose of implanting the eugenic ideal. It is undesirable that there should be any special course of lessons on moral training; such teaching should find its way unobtrusively, yet very definitely, into the ordinary subjects, but those named—literature, history, and such religious teaching as our schools afford—lend themselves more readily to the infusion of moral concept.

The teacher who understands thoroughly the aim he has in view, and who understands, too, what is meant by the eugenic ideal, will be able to select his works and his subject matter, and so to utilise them that they lend themselves to the development of character and to such up-building of the moral framework as shall make for integrity and for high ideals. The time of adolescence, the period of puberty, are the years which find the pupils most appreciative of ideals. In the Elementary schools the pupils pass away from the immediate sphere of influence just as they reach a critical age in their development, yet an earlier approach of maturity in many of these children leads them to be more developed at this age than children of a corresponding age in the Secondary Schools and those who lead more sheltered lives. So the Elementary School teacher need not feel that there is going to be no possibility of doing the good that he would hope to do, but there is, of course, a more prolonged opportunity in Secondary Schools for such work being thoroughly dealt with.

It will be realised that unless the parents are brought into sympathy with the scheme of work in the school and can be induced to do their share and to support the school effort too, much good that may be done in the school will be eradicated by home opposition. In any case, the home environment of some children, not only of the poorer classes, but the rich classes too, is entirely antagonistic to such reform, and would lessen very greatly the good results one would hope to obtain. Every effort, therefore, should be made by the teacher to gain the sympathy and support of the parents, and there should be no aggravation of their opposition by any neglect to secure their understanding of the school aim.

There are many ways by which this parental sympathy may be and has been obtained, and if parents feel that they can do nothing themselves, then they should be persuaded to recognise that the teacher is capable and desirous of acting as parent substitute.

In the Elementary School there appear to be more difficulties facing the experimentalist who would introduce this work than in the Secondary School, where the smaller classes permit of more individual instruction being given, and where the teacher can understand and provide for the needs of each pupil better than can be done in the Elementary School. Here the large classes may present a difficulty. The varied experience of the children, too, combined with the largeness of the classes, will necessitate a very careful treatment of subject matter so as to meet the needs of all.

But the greatest difficulty of all, at present, seems to be the general unpreparedness of the teachers to deal with the subject cautiously, effectively, and thoroughly; for the teacher must have a thorough knowledge of his subject, a thorough understanding of the sexual life of the child, an appreciation of the social experience likely to befall his pupils, tact and sympathy with child life, wisdom in approaching the parents, and that personality which shall gain the confidence of his pupils and carry conviction.

Many teachers are willing to learn, willing to prepare themselves, but reform will necesarily be slow and limited in expression until we can turn out into the teaching world vast bodies of teachers who are equipped with the necessary knowledge and understanding of their subject to enable them to fulfil this widened conception of the teacher's responsibilities. Hence there is urgent need for the incorporation of sex-education and eugenic training into work done in the Training Colleges.

# TRAINING AND SUPPLY OF TEACHERS.

Papers to be read at
THE NORTH OF ENGLAND EDUCATION CONFERENCE,
BRADFORD,
On Saturday, January 3rd, 1914..

## THE WORK OF THE TRAINING COLLEGES, WITH SOME COROLLARIES.

By Mr. ALFRED L. CANN, B.A.
(Manchester Municipal Day Training College).

The subject for consideration at this meeting is the training and supply of teachers. I have been asked to confine myself to the question of the training, and, in particular, to indicate the importance of the recent regulations of the Board of Education concerning the curriculum of students in Training Colleges.

The great changes which have taken place during the past ten years in the preliminary training of teachers have made inevitable corresponding changes in the Training College course. Soon the great majority of the entrants to a Training College will have been bursars and student-teachers. They will therefore come into the Training College equipped with such a general education as can be obtained during a four or five years' continuous course at a Secondary School, whilst they will also have acquired some knowledge during their student-teacher period concerning the work of a Primary School. In other words, the bias of their preliminary training will very properly have been on the educational rather than on the professional side. The recently-issued regulations show that in the opinion of the Board of Education the emphasis of their after-training in the Training Colleges should be transferred to the professional side. The education of the students has to be continued, but in such a way that their knowledge is deepened in special directions.

The attitude of the Board in this matter does not meet with universal acceptance. There are some who consider that the ideal curriculum for a Training College is that which prepares its students for a University degree and who urge that in furtherance of this aim there should be a considerable reduction in the length of the period which, in accordance with the Board's regulations, must now be spent in school practice by students.

I entirely dissent from the view thus suggested that training in the art of teaching and in the study of its principles should be regarded as of secondary importance in our Training Colleges. Whilst the positive value of liberal scholarship and high intellectual capacity is undoubted, it is nevertheless a truism that the possession of these does not necessarily presuppose ability to teach. Those who emphasise the importance of professional training are in the good company of the representative body of teachers responsible for drawing up the conditions of acceptance on the Teachers' Register. A year's training in teaching has been made an essential condition of enrolment after 1918. Ability to teach is probably a greater necessity for the Primary School teacher than for any other class of teacher, and this because of the youth of his scholars and the necessarily less advanced content of his lessons. Method counts for much in all teaching, but especially is this true in the teaching of the young. Amongst the ablest teachers—from the point of view of personal and professional qualities—are the successful teachers in Infants' Schools and in the lower classes of schools for older children. If the typical University don could by any chance be tempted to join the staff of a Primary School, and if he were successful in this position, his success would not be due to his high scholarship. Ability to teach young children does not often come "by the grace of God." There is only one way in which most of us can acquire it, and that is by practice, by actual experience—and it does not always come then. Some one has said: "A Primary School teacher must be able to teach, a Secondary School teacher need not be able to teach, a University teacher should not be able to teach." I agree with the first statement in this dictum, and it is with Primary School teachers that this paper is concerned.

I should like briefly to comment on the suggestion that the ideal system of teacher-training is that which gives intending teachers a University education. If no sacrifice of professional training is involved it seems difficult to find any objection to the system on educational grounds. Other things being equal—and amongst these other things are some supremely important things—it is the teacher of highest intellectual equipment who is likely to do the best work in our schools. But there are some further considerations which must not be overlooked.

In the first place, the necessary numbers of young people wishing to become teachers and capable of taking a University course are not forthcoming. Some increase may be expected when it has been made possible for every boy and girl of potentiality throughout the country to receive a Secondary School education, and in addition, when the teaching profession has been made more attractive. But a sufficient increase cannot be forthcoming for some years. At present, when Secondary Schools are sending in every available pupil for a matriculation examination or its equivalent, the total number of successful candidates is hopelessly inadequate. During the last complete academic year the total number of successful candidates in the matriculation examination conducted by the Joint Board of the four Northern Universities was 827. About 100 matriculated at the Birmingham University and about 60 at the Bristol University. At the University of Durham the number of successful candidates was 268. In the world-wide matriculation examination conducted by the London University 3,144 candidates were successful and 924 were registered by the University as exempt upon various qualifications approved by the Senate. (For obvious reasons, the entrants to Oxford and Cambridge are not included.) Many of these matriculants enter no profession, while of the remainder the teaching profession claims only a part. It is worthy of note that no country—including Germany, with its century-old national system of education—has ever attempted to staff its schools with University graduates.

And secondly, in a profession numbering its tens of thousands, engaged in many different types of schools, there is not only room but also need for variety in the qualifications of teachers and consequently in the methods of their training. Similarly, access to the Bar or the Church is not restricted to those who have passed through a University.

Incidentally, may I point out that, although Universities in their Day Training Colleges take an active part in the training of teachers, it is very rare to find that their students regard service in a Primary School as the goal of their professional ambition. They are honourably fulfilling their obligations to the State by teaching in any publicly-controlled school, and it need cause no surprise if they continue to prefer Secondary School work unless and until the conditions of service in Primary Schools are made to approximate more nearly to those found in Secondary Schools.

I should like now to call attention to the latest regulations for Training Colleges. Manifestly, any alteration in teacher-training methods or curriculum must have some effect in the Primary Schools, sooner or later. I wish particularly to point out some possible and important corollaries which seem to follow from recent changes.

The Training College is now required to pay considerable attention to the professional training of its students. In what are officially termed their general studies, students are allowed to make choice within certain limits, but all students are required to take the professional subjects, which include:

The Principles and Practice of Teaching,
Hygiene and Physical Training,
Theory of Music and Singing,
Reading and Recitation,
Drawing,
Needlework (for Women).

The syllabus in the "Principles of Teaching" has been revised and strengthened, and now fairly covers the field of Primary School education. Students who have had no recognised teaching experience in Primary Schools before admission are required to spend an extended period in school practice during their training. In the Training College I know best, the senior students spend more than half their time in the professional subjects, and the junior students almost half their time. Criticism lessons by students and demonstration lessons by members of the College staff form part of the ordinary routine of work. During their training, students pay visits of inspection to various types of educational institutions, such as Special Schools, a Country School, Schools for the Deaf and Dumb, etc. Students intended for Upper Schools visit Infants' Schools, and vice-versa. All students spend three weeks in Practising Schools during their junior year, and a month during their senior year, and derive great benefit from this practical experience and from the help freely and generously given by the Head Teachers and Class Teachers concerned. Thus, in these and other incidental ways, a serious attempt is made to secure that the training in teaching is as real and effective as possible. To those who urge that a disproportionate amount of time is given to professional work and too little to the students' own education, it may be pointed out that Education is itself of great value as a cultural subject, and properly studied derives much of its interest and illumination from various humanistic and scientific subjects.

I come to my first corollary. In spite of all this emphasis upon the professional side of the students' work, it is, nevertheless, unreasonable to expect that Training Colleges can send out teachers ready for any professional emergency, ready to take any class, in any subject, under any conditions. When the students have successfully completed their Training College course we call them "trained" teachers. But they have to remember that they have not completed their training. Head Teachers and Inspectors should also remember this. The best a Training College can do for the majority of its students is to send them out not dissatisfied, not self-satisfied, but certainly unsatisfied, conscious that they have yet much to learn, and willing and anxious to learn it. When is any teacher's training finished? When does the best type of teacher ever cease to learn? The unfinished character of the young "trained" teacher's training needs to be more generously recognised. Most of us have probably heard the complaint that the products of the Training Colleges are not as good as they used to be. One comforting thought is that as a matter of fact they never were. We have all heard the same complaint for years past, and may possibly hear it with still more painful iteration in the immediate future, because, in consequence of the substitution of the bursar and student-teacher system for the pupil-teacher system, it is inevitable that Training College students of to-day must fall far short of their predecessors in power of class-management. Rarely is the teacher-novice of to-day given entire responsibility for a whole class until he has completed his period of so-called training. Thus he has had but little opportunity of developing a power of class control, and in this matter the Training College cannot do very much for him. But the Training College can, and I believe does, help to develop a higher power—the power of teaching. It should not be forgotten that managing a class is not the same thing as teaching a class. We can manage a class wihout teaching it. It is equally true that we cannot teach a class without managing it, and, therefore, power of class-management is also of importance. In too many of our Primary Schools a teacher's power of class-management has necessarily on exaggerated value. Although it is generally agreed that to talk of teaching a class of sixty children is to use too flattering a description, if not, indeed, a contradiction in terms, there, unfortunately, these large classes too often are. Often, too, there are in Primary Schools other conditions which make the work very difficult even for teachers of long experience. I venture to plead for the kindly and sympathetic consideration of those in authority over young teachers when they first become responsible members of a school staff. Just as we do not expect from a young curate utterances worthy of an archbishop, nor from a recently-qualified medical student the practical skill of an up-to-date, experienced general practitioner, so in the same way we must not ask more than is reasonable from the newly-qualified trained teacher. If the same quality of work is expected from him as from the teacher with, say, ten years' experience, why is he not paid the same salary as would be the case if we were dealing with mechanics? And would not teaching be a poor sort of occupation if a student in a short two years can learn all there is to be learnt about it? The training of teachers does not, and cannot, end in the Training College; it must be continued in the Primary School. The students fresh from College still need help and guidance, and if the College has succeeded in giving them the right attitude towards their work they still welcome help and guidance.

With regard to the general education of the students, the recent regulations introduce one change of great importance. A student is now able to choose for himself, with the approval of the College authorities, a curriculum suited to his own particular needs or inclinations. English is compulsory for all students and not fewer than two other general subjects may be taken. Thus, it is now possible for a student to pass through a Training College without any further study of two of the following: History, Geography, Mathematics, Elementary Science. Nor is the student compelled to pay any attention to French, German, Latin, Physics, Chemistry, Botany, Rural Science, or, in the case of a woman student, Housecraft. The assumption apparently is that during the five or six years spent in their Secondary Schools by most of the incoming students they have acquired a sufficiently good knowledge of the ordinary subjects for the likely needs of Primary School teaching, and at the same time such a power of initiative and of self-help as will enable them to deal with new problems and difficulties. As far as my experience goes, this assumption is generally justified. It will probably be found that the majority of Training College students will find three general subjects quite sufficient, although ample scope is offered to those amongst them capable of taking a wider scheme of studies.

What are the possible consequences in the Primary Schools of this new provision in the Training College Regulations? An examination of the official syllabuses in the various subjects will show you that they all demand a wide and thorough course of study. The syllabuses have appeared somewhat in their present form in previous regulations and are, therefore, not entirely new. What is new is the provision whereby students may limit their curriculum and thus study more intensively the subjects chosen. Further, and this is significant, whilst the instruction given at the College in the principles and practice of teaching must include instruction in the methods of teaching all the subjects ordinarily taught in a Primary School, it must, *in particular*, provide, in the case of each individual student, for instruction in the methods of teaching each of the general subjects he has chosen, as far as this is necessary for Primary School work. Hence, a student who has elected to take, say, Geography, as one of his subjects, and who effectively realises the plan proposed by the Board of Education, will leave College not only with a good knowledge of geography but also with a good knowledge pertaining to the teaching of geography in a Primary School. In other words, he will have in some degree specialised as a teacher of geography. The final result of our present teacher-training system —including Preliminary and College training—in the case of such a student will, therefore, be that when he first enters the ranks of trained certificated teachers he will come equipped with the general education received during his Secondary School course, a knowledge obtained during his student-teacher period and Training College course, of the principles and practice of teaching and, lastly, a special knowledge, both from an academic and a professional point of view, of at least three general subjects. The Colleges, then, will in future train teachers with some specialist qualifications. Hence the question arises: How can these teachers be employed to the best advantage in the schools?

The varied and difficult conditions of Primary School work make it impossible to state a general proposition and any suggestions must necessarily be vague in their reference. Consider the case of the young teacher who has taken the Board's excellent course in geography. Might it not be helpful in more ways than one, if, after he has satisfactorily proved his general worth, he were given some special responsibility with regard to the teaching of this subject in the school? Various ways of doing this will occur to a Head Teacher. Every manager of a big concern knows that he cannot keep in close touch with all the details of the business. He recognises that a wise delegation of responsibility frees him for more important work, for more effective general supervision, whilst at the same time it provides a valuable means of encouraging junior colleagues and giving them a very real interest in the business. Such delegation does not imply that the manager could not do the delegated work as efficiently as the junior colleague to whom it is entrusted. The manager suffers no loss in dignity. I know some Head Teachers who have to some extent adopted this method of delegation. There is, for example, on the staff of a certain school a Class Teacher specially gifted in music. This Class Teacher—always of course subject to the approval of the Head Teacher—chooses the school songs, arranges the music syllabus for the whole school and is relieved from taking certain subjects with her own class in order to take music with other classes. In another school, one Class Teacher takes the geography of the two upper classes, and another Class Teacher the history. Such arrangements seem very sensible and are not at all uncommon. What I am now wanting to point out is that the extension of this principle will be more easily possible in the future than it has been hitherto, because of the new arrangements in the Training College. It need hardly be said that it means a great deal to a Class Teacher to find that any special qualification he may possess is recognised and utilised. It means an added interest, increased personal loyalty, a keener sense of responsibility for the general welfare of the school. It means more effective work, for every man does best that in which he is most interested. And, above all, it means an increase of professional dignity. He has been recognised as a partner in the concern.

I am touching here upon a really large question, for when it is remembered that only a small percentage of teachers can hope to become Head Teachers, it seems desirable—apart from other considerations—that if we are to attract the right sort of people into the teaching profession, no opportunity should be missed of making the profession of Class Teacher one sufficiently attractive in itself, not only in emolments but also in dignity. We do not hold our clergy in less regard because their individual chances of a Bishopric are so remote, nor is the public opinion of lawyers influenced by the fact that only few of them can reach the Bench. The passengers on an ocean liner have almost as much respect for the mates as for the captain, for they know that the mates, like the captain, hold the master's certificate. It will be a good thing for the teaching profession and therefore for the schools when the Class Teachers have similarly won or been given a place in public estimation worthy of their merits.

Let me add, returning to the original subject, that it doubtless sometimes happens that the teacher fresh from College comes into the school with ideas which need modification and which are sometimes impracticable. The mate may hold the master's certificate, but he lacks the master's experience. The wise Head Teacher will not, I think, quench the enthusiasms of his young colleague, but will direct them, and as far as possible utilise them. Sometimes, too, the Head Teacher may find that his young colleague's ideas deserve more consideration than at first sight appeared.

My last point is this: If it is agreed that there is a useful place on the Primary School staff for the teacher with special qualifications, then it follows that the Head Teacher of the school should have some voice—I put it modestly—in the selection of his future colleagues. The point seems too obvious to need elaboration. Indeed, it is surprising that Primary School Head Teachers have not enjoyed the right for years past.

I believe that a Training College organised in accordance with the recent regulations is likely to give effective help in the work of training teachers. What is now lacking is a supply of entrants to the teaching profession to fill the Colleges. But that is another story and outside the scope of this paper.

## THE SUPPLY OF TEACHERS: WHY IT IS FAILING.

### By Mr. A. DAKERS, B.A.

(President of the N.U.T.)

"Elementary teachers exert a greater influence in shaping national destinies than that possessed by any other profession or career."—The Right Hon. J. A. Pease, Leeds.

Mr. Pease was undoubtedly sincere when he uttered the foregoing remark; but the statement reads very strangely in the light of the Board of Education's long-continued wail over the falling off of candidates for the teaching profession. If teachers are so powerful as "shapers of national destinies," why are there so few to take up the task? This question provokes another. If the supply of teachers becomes inadequate to the demand the national well-being will be seriously threatened, and we are entitled to ask: "Are the Board of Education grappling with the problem in such a manner as to obtain a true and permanent solution?"

The official Blue Books and circulars supply the answers to both questions. The Board of Education Report ascribes the shortage of teachers to the cycle of good trade which this country has enjoyed for several years. This is an interesting pronouncement which brackets the career of a "shaper of national destinies" with the Army and the workhouse, as the last resort of chronic impecuniosity. Good trade causes recruiting to languish and empties the workhouses. National prosperity is also responsible, according to the Board of Education, for the unwillingness of young persons to take up the great and noble calling of guides and counsellors of the rising democracy.

The "recent activity in trade" (to quote the Board of Education Report) has revealed more profitable avenues of employment than can be offered by teaching. Here is the crux of the whole problem. Man does not live by bread alone, but most assuredly he cannot live without it. If teaching involves (as it does involve) the sacrifice of ambition, unremitting, incessant drudgery, and inadequate remuneration, then the result is inevitable. Even the prospect of being able to "shape national destinies" will fail to attract candidates, and educational efficiency will be seriously threatened.

Having discovered the cause, the Board of Education should have at once prescribed the remedy; but this they evidently shrink from doing. Instead, they advise measures which are calculated to aggravate the ravages of the disease. The practice of progressively raising the standard of the Preliminary Certificate Examination has been abandoned because of the shortage of candidates. In other words, the Board are prepared to flood the schools with unsuitable and inefficient teachers in order to cope with difficulties created by short-sighted parsimony. The future rulers of our world-wide Empire must have their mental equipment curtailed and their educational opportunities denied because Whitehall refuses to acknowledge that the labourer is worthy of his reward.

Circular 821 is the natural sequel to the policy outlined in the preceding paragraph. The practice of progressively raising the standard having been abandoned, the trap must now be set with more alluring bait. Increased financial aid will be given, not for the raising of the salaries of competent teachers, but for the purpose of assisting the children of poor parents to undergo that preliminary training in a Secondary School which the Board consider essential to the making of a teacher. The State needs efficiency in other callings—the law, medicine, engineering, etc.—but no Maintenance Grants are given to parents who wish their offspring to follow these occupations. Teaching is the only profession chosen for these special favours.

What is the reason for this preference? It is not a recognition of the importance of the teacher's work. If this were so the favours would extend through the whole career; and the "shapers of national destinies" would enjoy salaries commensurate with the nobility of their calling. Maintenance Grants begin and end with the period spent in a Secondary School. Parents who cannot send their children to Secondary Schools cannot afford to allow them to go to a Training College to complete their professional qualifications, but the Board of Education offer no additional assistance for this stage. It is this omission which reveals with a vivid lightning-flash the true inwardness of Circular 821.

The young persons who have been entrapped by the offer of Maintenance Grants will find their further progress hopelessly blocked and themselves relegated to one of the most dreary of all blind-alley occupations. If they have the physical strength and the ability they may obtain the Acting Teacher's Certificate. They will then discover that they can never obtain promotion, and if they seek employment under such Authorities as Bacup, Bootle, Cheltenham, Finchley and a few others, their remuneration during their professional career of forty-five years will be between £1,000 and £2,000 less than that of their Collegiate colleagues.

The fate of the Non-Collegiate teacher is the best prospect before the future victims of Circular 821. The great majority will never have the good fortune to become fully qualified. They will be relegated to the class known as Uncertificated Assistants, and in this grade they may remain for the whole of their lives; for retirement at the age of sixty-five is not obligatory upon them, nor is there any pension to tempt them to leave their occupation. During their service they will receive the princely remuneration of about 20s. a week in the case of women and 25s. in the case of men. It is still true that "it is better to be a doorkeeper in the House of Lords" than a "shaper of national destinies" in the schools of the most progressive and most civilised people of the world."

The exploiter of sweated labour is justly abhorred and detested by all who acknowledge the common brotherhood of man. Shall we withhold condemnation when the oppressor is a Government Department or a Local Education Authority? The education of our children is either necessary or unnecessary. If unnecessary, then let us have the courage of our convictions and sweep every Education Act from the Statute Book and convert our schools into warehouses or Drill Halls. If, however, we believe that education is essential for the national welfare, we must not shrink from paying the price. The attempt of the Board of Education to flood the schools with sweated labour is not only criminal, it is a blunder of the most colossal character. In vain is the net spread in the sight of any bird. Even when the "recent activity in trade" has run its course, parents will still hesitate before they condemn their children to a hopeless wandering in such a blind-alley profession. There are to-day, and will be for a long time to come, many occupations which offer better prospects than 20s. or 25s. a week.

An ever-increasing demand is arising from the democracy for more highly qualified teachers in our schools. The Miners' Federation and the Workers' Educational Association have both voiced this demand in no uncertain tone. The Uncertificated Teachers are beloved by the Board of Education, not because of their efficiency, but because of their cheapness. I make no attack on these teachers. If they are equal or superior to the fully-qualified teacher, why is their remuneration less? Never yet have I heard of an Education Committee paying its partially-qualified staff on a higher scale than the Certificated Teachers. In the schools of the East Riding of Yorkshire 29 per cent. of the teachers are Uncertificated, in the North Riding 36 per cent. belong to that grade, and in the West Riding 30 per cent. All these Authorities are notorious for the abnormally low salaries paid to Certificated Teachers; and needless to say none of them reward the services of Uncertificated Teachers at a higher rate.

The conclusion is obvious. Cheapness, not efficiency, is the recommendation of the Uncertificated Teacher, who is mercilessly sweated after being beguiled into a blind-alley profession by a Government Department which has not the courage to face the logic of facts. More teachers are required for the schools, but quality as well as quantity is demanded. If Maintenance Grants are necessary at the outset of a teacher's career let them be given. We do not ask that our profession shall be closed to none but the wealthy; but we demand that the assistance, if it is given, shall be thorough. Do not be content with manufacturing partially qualified teachers. Insist that all shall obtain their diploma at a Training College with the assistance, if necessary, of State subventions, and that those who win their professional spurs in this way shall have a reasonable prospect of a career worthy of the "shapers of national destinies."

This policy may not suit the reactionaries who control many Education Committees to-day; but I feel sure that it will commend itself to the people. Democracies are human and have committed many errors, but they have never been guilty of the vice of parsimony. When the doctors demanded a fair remuneration for their services they had popular support at their back. We claim with all modesty that our services are as valuable to the nation, but we do not ask for quite the same reward. Our Union scale of salaries asks that after about thirteen years' service a Certificated Assistant Master may receive £200 and a Mistress £160 per annum. No wonder that a leading weekly publication describes this programme as absolutely "painful in its moderation."

Sir W. Harcourt has put it on record that in his opinion £160 is the lowest income on which a professional man or woman can live at a reasonable standard of comfort. He gave this as his reason for raising the limit of income-tax exemption. In the light of this statement examine the following statistics as to teachers' salaries. The figures are from the latest Government Blue Book:

HEAD MASTERS.

One receives £560.

Below £160 47 per cent.

(One Head Master receives less than £50.)

CERTIFICATED ASSISTANT MASTERS.

Below £160 82 per cent.

(Two receive less than £50.)

HEAD MISTRESSES.

Below £160 85 per cent.

(Two Head Mistresses receive less than £50.)

CERTIFICATED ASSISTANT MISTRESSES.

Fourteen out of 49,000 receive more than £160.

377 receive less than £50.

These figures show that there is no teacher in any Primary School who can be described as well paid. The solitary recipient of £560 can only claim to be wealthy in comparison with his 99,999 colleagues. A "shaper of national destinies" is not munificently rewarded even when he receives £560 per annum. There are thousands who receive more for less valuable service. No Education Committee can say that its teachers are generously paid, except on the principle which awards the sovereignty of the blind to the one-eyed man. Bradford and Leeds are not so bad as the North, East, and West Ridings, but neither of these towns allows its Certificated Assistants to attain to Sir W. Harcourt's "minimum standard of comfort." Of the salaries paid in the North and East Ridings it is difficult to speak with patience. It is perhaps sufficient to say that in these two areas there are several Head Teachers whose incomes will be considerably increased when they retire from active service and enter into enjoyment of their Government Superannuation allowances. To any teacher who thinks of entering the service of these authorities I say, "Wait and see if they accede to the demands for better remuneration."

The cause of the dearth of teachers and the remedy are plain. Cease filling the schools with unskilled and, therefore, sweated labour. Do not be content with throwing only the entrance gates wider open. Increase the future rewards of those who enter and show to parents and guardians that even in times of "activity in trade" teaching is an occupation worth following. The people can help towards the realisation of this ideal. Their children's future is at stake, for if the reactionaries retain their dominion the Primary Schools will steadily drift towards educational bankruptcy. Let the people insist on their representatives acceding to the claim of the teachers for fair remuneration, and let parents and guardians refuse to allow their offspring to become "shapers of national destinies" until the labourer's reward is more commensurate with the nobility of his work.

# JUVENILE EMPLOYMENT.

A Paper to be read at
THE NORTH OF ENGLAND EDUCATION CONFERENCE,
BRADFORD,
On Saturday, January 3rd, 1914.

## SOME PROBLEMS OF JUVENILE EMPLOYMENT.

By MR. KELSALL BROADLEY, B.Sc. (Senior Organising Officer for Juvenile Employment, Board of Trade Labour Exchanges).

This paper is an attempt to state what are the main problems of juvenile labour, to supply some evidence as to the character and results of blind-alley employment, and to hazard some suggestions towards the solution of some of the difficulties.

In order to emphasise present-day problems, a comparison with the now rapidly declining apprenticeship system has been introduced, but the paper is not intended as a lament on the decay of the mediæval method, nor as a suggestion that the revival of it, were that possible, would form a solution of our existing difficulties.

### PRESENT CONDITIONS.

The leading features of present-day juvenile labour may be stated as follows: —

(1) *In nearly all industrial districts there is a demand for young workers far in excess of the supply.* This demand varies in intensity in individual towns, but, speaking generally, exceeds the supply. This is, perhaps, one reason why so many school children are at work out of school hours. The employment of school children is far more common than is generally supposed. A return compiled within the past few weeks for the city of Nottingham shows that

2,933 school children are employed out of school hours.
361 of these juveniles are under eleven years of age, and
772 are either working excessive hours, or during hours prohibited by the by-laws.

There are therefore 1,133 children on the rolls of the Nottingham schools illegally employed.

(2) *A very large number of occupations are followed almost exclusively by young people*, so that in them there is only a very slight chance of a lad finding permanent employment. This class of work is common. In many towns over 50 per cent. of the jobs open to boys are of this character. Examples will occur to everyone. As well as the familiar case of the errand and van boy, examples are found in worsted spinning, where probably less than 5 per cent. of the lads are ultimately absorbed; in cotton spinning, where Mr. Sidney Webb estimated that there are ten times as many piecers trained as are required to fill minders' places; while in a less pronounced form a similar state of affairs exists in the boot trade, and, indeed, in a great many other industries where relays of boy labour are commonly employed.

In an important article on Juvenile Labour and the Scottish Census Returns, by Mr. Arthur Greenwood, of Leeds University, he says:—

"Any industry in which about 10 per cent. of the employees are juveniles will be able, in the aggregate, to find fairly permanent places for all its boy workers, provided there are no disturbing factors, such as the influx of adult workers from other jobs; but if the proportion of boys is much less than this, then the adult branches of the industry must be recruited from other sources; whilst, on the other hand, if the number of juveniles is much larger than 10 per cent., there will be an excess which cannot be absorbed, and which must ultimately seek employment elsewhere."

Judged by this standard, most of our retail trades, and nearly all the textile trades, appear to employ a much larger proportion of boys than it is possible for them to absorb.

In some towns where the supply and demand for juvenile labour are not too disproportionate, the Labour Exchange officials state that the issue of exemptions from school attendance, especially when those occur in large batches, as after labour examinations, is followed within a few weeks by the appearance at the Exchange of unusual numbers of lads sixteen to eighteen years of age. This appears to mean that the little fellows have ousted their elder brothers from the situations they previously held.

At present there is no statistical evidence to prove that this is so; if true, it may perhaps be held to serve a good purpose in turning lads from non-educational work before they are too old to take up more promising employment. On the other hand, educationists will probably regard it as some support for the proposal to raise the school-leaving age.

Work of this kind has usually several special characteristics.

(*a*) It is well paid, far more highly paid than apprenticeship to skilled trade e.g., a boy at sixteen years in the boot trade may, and frequently does, earn 15s. or 16s. a week. This is a great attraction to parents who are living near the poverty line, and it must be admitted that the sacrifice of the prospects of the elder children does often mean better food and opportunities for the younger.

If, as we are told, parental control has decayed, is it not due to the economic independence of youngsters of fifteen or sixteen years whose wages are important contributions to the family exchequer, rather than to the influence of a defective educational system?

(*b*) The work, simple in character and readily learnt, usually gives no skill or training which will serve in another occupation. Some occupations, indeed, most certainly lead to deterioration and unfitness for regular employment later.

(*c*) The great demand for workers of this class leads the lads to change their employers on the most trivial grounds. It is no uncommon thing to find lads who have had twelve to fifteen employers in three years' work in some cases they have also changed the character of the employment. These frequent changes of employer and work give no chance, if chance there be, for the acquisition of technical knowledge and training and the discipline which comes from regular employment, and continued effort is, therefore, impossible.

(3) There is, as a result of the conditions indicated, a disproportionate amount of unemployment amongst young men.

It is not so much "Too old at forty" as "Too old at seventeen or eighteen years of age."

Inquiries made at the Labour Exchanges in the Yorkshire and East Midlands Division respecting unemployed youths between seventeen and twenty-one years of age have produced evidence which is very suggestive.

In fourteen towns special investigations were made into the cases of all applicants between the above-mentioned ages who made application for work in the months of August and September, 1913. As the past year has been one of great trade activity, there is no reason to believe that the numbers are in any way excessive; on the other hand, they are probably below what one would find in normal times.

The case of Bradford, typical of the rest, may be given as an example. The evidence deals with all the applicants (261) who asked for work in the period, and brings out certain facts.

(1) *Education and Intelligence of Applicants,* based upon standard reached before leaving school.

45.9 per cent. reached Standard VII. or Ex-VII.

27.2 per cent. reached Standard VI.

19.1 per cent. reached Standard V.

4.9 per cent. reached standard below Standard V.

2.9 per cent. could not be ascertained.

Only one Secondary School boy was registered, and he was included with Standard VII. and Ex-VII.

It is rather striking to find that 73 per cent. of the applicants had reached Standard VI. or higher, especially when the bulk of them left school at thirteen years of age.

(2) *Industrial Character of Applicants.*—As the only way of eliminating the personal factor in the investigation, this was based entirely upon the duration of employment with one employer.

42.1 per cent. kept one situation for three years or more.

31.8 per cent. kept one situation for two years, but less than three years.

22.9 per cent. kept one situation for one year, but less than two years.

3.2 per cent. kept one situation for less than one year.

Nearly 74 per cent. kept one post for two years or more, while nearly 23 per cent. more had managed to work in one situation for at least a year.

(3) *Occupations mainly followed between fourteen and seventeen years of age.*

160 boys, or 61.3 per cent., worsted trade (two-thirds of them worsted spinning).

45 boys, or 17.2 per cent., retail trades, mainly errand boys and drivers.

26 boys, or 10 per cent., factory workers, not worsted.

10 boys, or 3.8 per cent., office boys.

11 boys, or 4.2 per cent., skilled trades.

9 boys, or 3.5 per cent., miscellaneous, chiefly farm and garden

Nearly 90 per cent. of these occupations are highly paid in the initial stages, and for the most part do little towards preparing the lad for adult employment.

(4) *Occupations which were last followed before applying at the Exchange.*

67 applicants, or 25.7 per cent., were last employed in the worsted industry, chiefly in spinning departments and warehouses.

29 applicants, or 11.1 per cent., wool-combers.

16 applicants, or 6.1 per cent., dyers' labourers.

59 applicants, or 22.9 per cent., general labourers.

10 applicants, or 4 per cent., bottle-washers and employees in licensed houses.

21 applicants, or 8.1 per cent., junior shop-assistants, messengers, and porters.

9 applicants, or 3.5 per cent., engineering and building trades.

32 applicants, or 12.2 per cent., drivers of horses.

9 applicants, or 3.5 per cent., clerical work.

9 applicants, or 3.5 per cent., miscellaneous, mainly bill distributing and street trading.

The return appears to show :—

(*a*) That the applicants were not in any sense educationally inferior. The large proportion of Standard VII. boys included in the return is a striking feature in nearly every town. They are often employed in the very lowest class of work—*e.g.*, one Standard VII. lad had been carrying out boxes and parcels for a milliner for 3½ years, another (Standard ex-VII.), twenty years of age, worked as a sand-paperer.

(*b*) The bulk of the applicants had good industrial characters. A worker who keeps one post for two years or more is neither devoid of ability nor of character.

(*c*) That the lads having begun industrial life in the highly-paid but non-educational occupations were led on ultimately to work which for men is either very moderately paid or irregular in character. In other words, neither educational attainments nor industrial character can, as a general rule, counteract the influences of a mistaken choice of employment.

Educational work cannot be said to be completed until the boy or girl from school is on the way to being a useful citizen, and unless some help and guidance are forthcoming at the critical moment, when a choice of employment is made, it is certain that disaster will often befall those who encounter the pitfalls and dangers which so frequently await them.

This return and similar information which I possess regarding the conditions in other towns indicate that the schools have done their duty pretty well by the lads. They are not in their present lamentable condition for lack of education, and school discipline has developed for them industry and sufficient force of character to enable them to keep a situation for a considerable length of time.

What seems to be wanted to meet this position is not necessarily a greater amount of orthodox education, either technical or general. The education already obtained will, no doubt, be sufficient to make them thoroughly discontented labourers and bottle-washers, without, perhaps, affording them any other compensation. *Opportunities and guidance* are what they require.

The waste of educational effort and of natural talent under the present conditions is enormous, and when educationists realise that the clever boys from the schools so frequently drift into irregular and unsuitable work and deteriorate under its influence they will seize upon the opportunities afforded them and will regard the Juvenile Employment Committees as amongst the most valuable agencies which work for juvenile betterment.

In the words of the Minority Report of the Royal Commission on the Poor Laws : "We cannot believe that the nation can long persist in ignoring the fact that the unemployed, and particularly the under-employed and the unemployable, are thus being daily created under our eyes out of bright young lives capable of better things."

A brief comparison with the old apprenticeship system may perhaps serve to emphasise existing difficulties.

| *Apprenticeship System.* | *Present Conditions.* |
|---|---|
| (1) It provided for the apprentice a complete technical training up to twenty-one years of age. This was enforceable by the Guilds and by statute. | (1) Technical training in our Technical Schools is voluntary, and is only undertaken in any thorough manner by a small proportion of the rising generation. As now organised many modern industries cannot give this training in the workshop. |
| (2) Regular employment during the years of adolescence. | (2) Unemployment is now extremely common between seventeen and twenty-one years of age, and is accompanied by deterioration on all sides. |
| (3) Some definite person armed with authority responsible for the industrial and moral training of the youth. | (3) Neither parent, Education Authority, nor employer entirely realises and accepts responsibility for the future of the young. The employer discharges his obligations by paying comparatively high wages. These high wages bringing economic independence to the young, often make it difficult to exercise parental control, while the Education Authority has, at present, no powers of controlling those who are beyond the age of fourteen years. |
| (4) The youth was regarded as a learner preparing for a man's work. His recompense was not only wages, but also training. | (4) The youth is regarded as a producer and is paid, as a rule, on the same footing as an adult, *i.e.*, according to output. |

In spite of many efforts which are being made to foster the apprenticeship system, it must be realised that under the present industrial organisation any general revival of it (in the sense of making it the usual way of entering a trade) is, if not impossible, extremely improbable.

In addition to the difficulties due to the developments of the factory system we have to remember that what the father and the apprentice really paid for in premium or service was not only instruction and training in a handicraft, but the legal right to exercise a protected trade. With the disappearance of this guarantee apprenticeship lost one of its chief attractions.

If we mean to face the facts we must realise that:—

(1) Much of this non-educational blind-alley employment is work which has to be done for the service of mankind. Whatever educational or other advances are made, there must be someone who will execute these necessary services.

(2) At present the existing skilled trades could not absorb the output of the schools.

(3) There are many trades in which the workers are recruited, not from the ranks of boys, but from the ranks of young unskilled labourers.

(4 Economic pressure does and will apparently continue to produce parents and children ready to accept work of this kind on account of the immediate advantages which it offers.

(5) Unless something can be done we shall continue to produce, as we are producing now, masses of young men who, on account of deterioration, lack of training, or instability of character, are less in demand as workers at twenty-one years of age than when they left school.

In order to meet the position we need :—

(*a*) The study and dissemination of information on matters relating to juvenile employment and the consequent formation of public opinion. The existing Employment Committees (fifty-six Choice of Employment and thirty-eight Advisory Committees) are doing already useful work of this kind.

(*b*) A plan for preventing the deterioration of lads while employed in non-educational work.

This would require definite oral and manual teaching arranged to meet local conditions, and some form of supervision, a combination, if possible, of the features of the Continuation Schools and the existing Lads' Clubs, with the functions of After-Care workers thrown in.

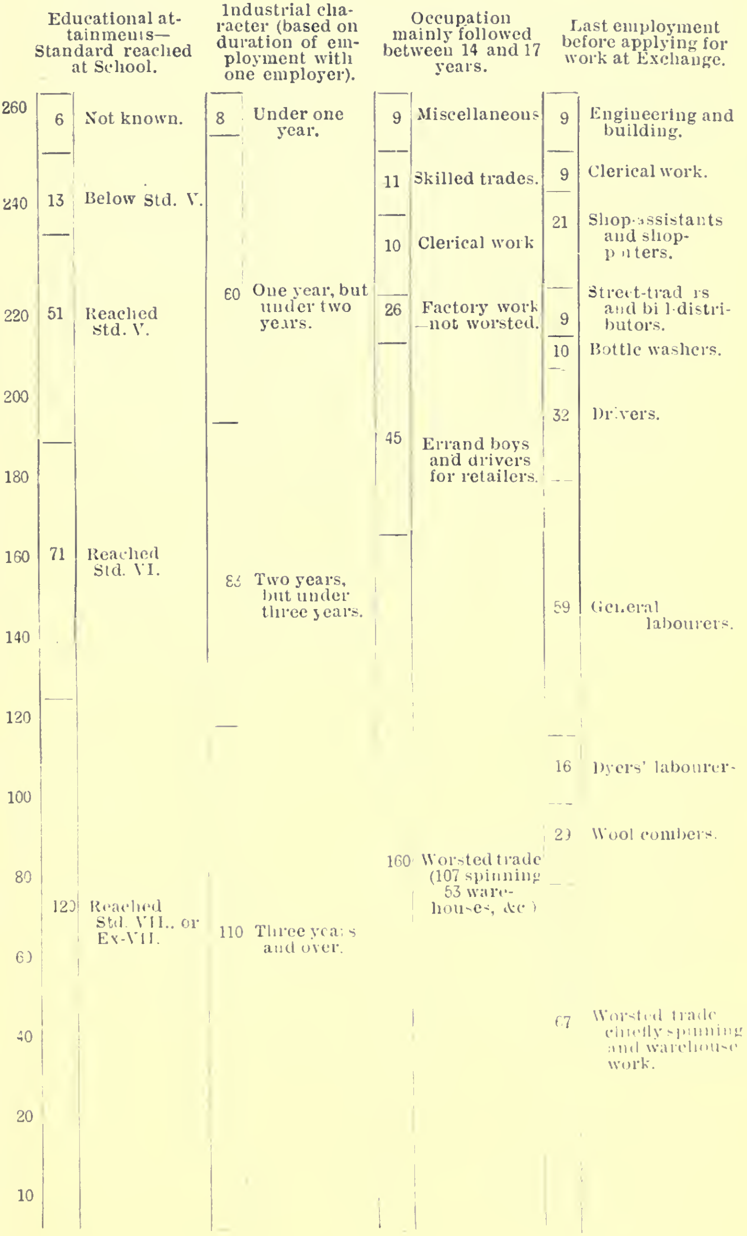
To be really efficacious in addition to the instruction such as is now provided in the Evening Schools, there must be *esprit de corps*, a character-forming influence frequently found in Lads' Clubs and such organisations, where boys play as well as study together and correspondingly rare in the existing Continuation Schools.

The question of compulsory attendance at continuation classes is being keenly debated and the exact form or character of these classes is also under discussion; but while the argument goes on, and it may continue for a long time, the problem of the boys remains unchanged. Meanwhile, it is gratifying to find that some Committees are endeavouring to alleviate the position. The classes for errand boys now being formed in York have the support of over 100 employers, who will grant time for attendance on two days a week in business hours.

(*c*) Some powers to prevent lads from remaining too long in unsatisfactory situations. Instead of being dismissed or leaving in despair at seventeen the lad should be warned at fifteen or so, so that he cannot be absorbed into the trade, and if during the preceding period he has been under some form of educational training and discipline there is still a chance of his becoming a useful citizen, able in manhood to earn a living wage and to maintain in decency a household; whereas there are few lads at seventeen or eighteen years of age able to accept the low wages which promising openings can offer.

Various suggestions have been made as to the measures required to give effect to the above ends. Among these may be mentioned the formation of Employment Committees in all our large towns to study the question and to form public opinion —compulsory registration of all juvenile employment in order to acquire reliable information and later the granting to these Committees of power to control the conditions under which the young are employed, as, in former times, the Guilds regulated the conditions of apprenticeship.

Some information respecting 261 young men (17—21) who sought employment through the Bradford Labour Exchange during August and September, 1913.



*Extract from an indenture, dated January 23rd,* 1781.

". . . During all which term the said apprentice his said Master well and faithfully shall serve, his secrets shall keep, his lawful commands shall do. Fornication and adultery shall not commit. Hurt or Damage to his said Master shall not do or consent to be done, but to his power shall let it and forthwith his said Master thereof warn. Taverns or Alehouses he shall not Haunt or Frequent unless it be about his Master's business there to be done.

"At Dice, Card-tables, Bowls, or any other unlawful games he shall not play.

. . . . . . . . . .

"He, the said John Mercer his executors, Administrators, or Assigns shall and will Teach, Learn, and Inform him, the said apprentice, or cause him to be taught, learned, and informed, in the Art and Mystery of Cordwaining, which the said Master now useth after the best manner of knowledge.

"And also shall find and provide to and for his said apprentice sufficient and enough of Meat, Drink, and Lodging, and Shoes and Aprons during the whole time of his Apprenticeship.

"And the said John Mercer is to allow his said apprentice a fortnight every year to improve himself in Writing and Accounts."

# DESIDERATA IN ELEMENTARY EDUCATION.

Papers to be read at
THE NORTH OF ENGLAND EDUCATION CONFERENCE,
BRADFORD.
On Saturday, January 3rd, 1914.

## ENGLISH LITERATURE IN ELEMENTARY SCHOOLS.

By Miss ALICE M. JACKSON, B.A.
(Manchester).

A few years ago the candidates at the Government Certificate Examination were asked what they would say in reply to a parent who was supposed to have written to them as teachers, "Please don't teach my Tom any more poetry; he is going to be a grocer." Like this parent, there are many people who seem to have forgotten that whatever else their boys and girls are going to be, they will, if they grow up, at least be men and women. Since they must share the common needs of humanity, it follows that literature is a vital necessity to them. If life is worth living, the humanities must be worth teaching.

Many of the mistakes in education made in the past were due to the fact that we refused to believe that the children whom it was our privilege to educate were full-blooded humans, for whom emotion and action were as fundamentally important as thought. We offered a curriculum suitable for a low-grade clerk, and were surprised that many of the boys brought up on it lacked imagination and initiative, and that the girls it produced were not always very good mothers. Everybody remembers Rousseau's famous remark, after sketching out an education for Emile, in which feeling had been ignored, "It *now* remains to give him a heart." We have learnt, since Rousseau's day, that from the very beginning we must keep in view the complex nature and the varying needs of a real child, and we must begin at once to train him in right habits of feeling and action as well as of thought.

The prime necessity for a teacher of literature is an interest in life. It does not so much matter what aspect of life most arouses our enthusiasm, if only it moves us deeply enough. We all read in what Sir Thomas Browne so finely called "that universal and public manuscript which lies expansèd unto the eyes of all," but we read different pages. If we know and love the page which we are reading, we shall not find it hard to believe that other pages in the same book may be read and loved by others. Literature heightens our sense of the liveableness of life. Offering us, as Matthew Arnold said, "a criticism of life," it gives us a certain standpoint from which to see its power and its beauty.

Can the dramatic savour of existence be brought home to the dwellers in our great cities otherwise than in the form of murder news in the evening papers? Can a study of the tragic in literature give people the power of seeing in the everyday life around them something of noble and uplifting tragedy where now they see only the sordid and the horrible? If Aristotle was right, this is what the great masters of literary tragedy do for us; they do not make life less tragic, but they help us to see a meaning in its tragedy and its comedy which might not have been apparent to us without their help.

The *belles lettres* of the great masters of thought come to the poorest and meanest of us, offering their interpretations of life and of death. Children, in being taught how to read, have been given, as one writer has said, "the key of the great wisdom box," but in order that they may desire to open it, we must give them some idea of the kingly treasures which lie within. The phrases minted by royal thinkers bring us not only words rich and beautiful, but the wealth of great ideas enshrined in the words. The poorest toiler may feel "the wind on the heath"; in places where no flowers are, the fragrance of "the rose of the world," may be sweet; while to "world-deafened ears" the music made when "the morning stars sang together" may sound refreshingly.

Nearly all our "method" in the teaching of English will follow from the aims of the teaching which have been suggested. Our children must have sufficient literature to give them some idea of its immense variety in matter and form. We shall begin, of course, with stories and simple rhymes, remembering the wise counsels of Plato on these matters. We shall regularly read aloud to our children, offering little or no explanation but such as is suggested by the living voice—that best interpreter of authors who, though called "dead," are essentially immortal. The children will understand that such reading is for their enjoyment, and they will early begin to think of books as a source of noble pleasure from which they can at all times take what they want. They themselves will be encouraged in the habit of reading, both silently and aloud; different children will learn by heart, and will say in different ways, the different passages of prose and poetry which appeal to them and which they desire to have as "a precious possession for ever." Many children will at first prefer some literature which is not really first-rate, but sincerity in judgment must always be cultivated and appreciation of the best will come in time. Literature will be associated with the other fine arts, especially with music, painting, and drama, and the connection of the finest literature with religion must not be forgotten. The children's own speech will unconsciously be improved by the study of great models, and at last the ordinary conversation of our citizens may become vivid, forcible, and beautiful.

After a good deal of literary ground has been somewhat lightly covered, a more detailed study of some great passages of literature may be attempted, and gradually the children will acquire some power of analysis and some idea of literary form.

In the upper standards and in the Continuation Schools, where, it is to be hoped, great numbers of our adolescent boys and girls will soon be gathered, literature will take an important place. Wholesome drama and romance will provide sustenance for the emotional life now expanding so rapidly. Noble ideals of life will be woven into the long, long dreams of youth. Concrete examples of noble manhood and womanhood will enrich the experience of the individual, and by their suggestiveness will quicken in him the social instincts and check the growth of mean and selfish impulses. The power of entering imaginatively into the lives of others will be acquired, and from this, sympathetic action will almost certainly follow.

This is an old ideal, but may I ask you to consider whether it is an ideal for the rich few or for the great masses of the people educated in our Elementary Schools? The more intensely conscious we are of the dangers and limitations in the lives of the poor, the more eager shall we be to make their children worthy freemen in the republic of letters. Man's "unconquerable soul" aspires to the highest. Blessed are we if we can help our children to realise that there is a kingdom of God and that it lies within us and them.

## THE IMPORTANCE TO GIRLS OF TRAINING IN HOUSECRAFT.

By Miss CLEGHORN, M.A.
(Sheffield.)

Six years ago, at the North of England Conference in Sheffield, I had the honour of reading a paper on "Housecraft in Girls' Schools." Last year, at Nottingham, I again had the privilege of presenting the same subject to the Conference there assembled. This, then, is the "third time of asking" for consideration of the importance of housecraft training for our girls; and it seems to me that this should be the opportunity of questioning ourselves and the public beyond these walls: whether there is any good reason for further delay; whether the teaching of housecraft *is* important; and whether the slow progress made is commensurate with that importance.

I remember at the close of my paper at Sheffield I advocated an attempt to meet the difficulties (mostly financial ones) of the introduction of teaching this subject in a practical way by boldly making the best (or the worst) of the situation, and attempting to bring such teaching into the ordinary classroom, by the class teacher and with little or no apparatus, excepting such as might be supplied by the children themselves. To this end, I compiled a syllabus arranged under three heads: (1) Demonstration lessons by the teacher; (2) practical work by the scholars; (3) written exercises following the demonstration lessons. This really was a counsel of despair and was only adopted in a few rare instances, although I have been given to understand that where it was tried it was most successful. Naturally, any teacher attempting such a task would be the enthusiast who would make a success under any circumstances. Since then, however, opinions have changed considerably, and it would take a brave man and a still braver woman to challenge to-day the importance of this subject or to suggest such a makeshift policy as the one just outlined.

Instead, most thinking people are agreed that the subject is of vital importance and must be taught by fully qualified teachers in properly equipped places.

We all realise that some efforts must be made to improve the conditions of the poorer homes of our country. It is, of course, largely a social question—bad housing, sweated labour, overcrowding, starvation wages, and many other hindrances to progress exist; but are we satisfied that as educationists we are not to some extent responsible? If we allow our girls to grow up ignorant of those things that make for comfort and happiness in a home, can we wonder that many homes are uncomfortable and unhappy? Domestic economy is as important as political economy, only it deals with the part, not the whole, of the economy of life. Will the whole be good if the constituent parts are bad?

We read of physical deterioration, race suicide, poor law reform, infantile mortality, and we realise how much responsibility rests on the mother, the trainer of the children; but is it fair to leave it all to her? It is quite true, under ideal conditions, the mother is, or ought to be, the trainer of her children;

but how many mothers live under such ideal conditions? How many mothers can and do train their girls to home responsibilities?

Do not let us hide our heads in the sand; let us acknowledge that present conditions actually hinder girls from obtaining such training in their homes, and therefore it is essential that it should be obtained elsewhere.

What are these conditions, then, that hinder the modern girl from becoming a good housewife and mother?

I. Compulsory Education.—Years ago girls were not compelled by law to go to school, and their mothers, rightly or wrongly, kept them at home whenever they required them. So these girls took a larger share in the home life—they helped mother in washing, cleaning, cooking, and nursing the baby. They went the errands, bargained and bought, and in a desultory sort of fashion went to school when they were not wanted at home.

But the Act of 1870 altered all this, and girls were compelled to attend school regularly and so missed the mother's instruction in the work of the home. Hence the nation's right to supply to these girls the training they do not now get in their homes.

But you may suggest, many girls are still kept at home when they ought to be at school. That is quite true, but, as a rule, the mothers who would be most likely to give their daughters home training of the right kind are those who realise the importance of education and send their children regularly to school.

II. Changes in Conditions of Labour.—The introduction of machinery has made much of the factory work formerly done by men and boys open to women and girls, and consequently many of the latter when they are allowed to leave school drift at once into the factory or the workshop and again lose their chance of acquiring such valuable knowledge.

Again, the girl of the better-class parent has fewer opportunities than formerly of becoming an adept in household management. The small-salaried professional man, the clerk, the shopkeeper, the farmer even, does not now keep his daughters at home waiting in patience and hopefulness for the man who does not always appear, and incidentally during that waiting period acquainting herself with methods of managing the hypothetical home. A course of reading of the Jane Austen type should be sufficient to convince the most sceptical mind of the great change in the focus and outlook on life of the "Early Victorian" compared with the modern girl. *Now* it is not only what shall our boys become, but also how can we fit our girls to earn a livelihood? More and more has education and enlightenment made the modern girl independent and inclined to make or mar her own life in her own way, not simply to "wait and see," but to work and see. Is it not essential then that modern education should fit modern needs?

Education is for life—mark I do not say for livelihood. Life is many-sided, but its centre is the home. Education, therefore, should include some form of practical training for girls in homecraft. Then when it comes to be their turn to manage a home they will be able to bring to it knowledge instead of ignorance, a sense of decency and self-respect, a desire to overcome difficulties, to resist the degradation at present so prevalent, and to refuse to submit to conditions alike disgraceful to themselves and our great Empire. The school must supply what the school has forced out of the home life of the child. The girl who is going to be a success in the future must not only know how to spin in the factory, type in the office, teach in the classroom, but also must she know how to do what after all every girl in her heart wants to do—to make a home, even if it be only a home for her own solitary old age.

What are the facts? About four million women in this country are wage earners. Of these only some four hundred thousand are engaged in intellectual pursuits. The remaining three and a half millions are either in factories or workshops, in domestic service, or employed as milliners, dressmakers, shirt makers, or some kindred form of wage-earning work. At least one million out of the four millions will be perpetual wage earners.

Are we doing our duty if we do not give them the chance of obtaining some instruction in the art, science, and practice of housecraft? You do not employ for your doctor, your lawyer, your plumber, or gardener, the unqualified man or woman—why should you leave it to chance that the future woman to become the head of the future home, be it rich or poor, should come to her kingdom totally untrained and unqualified for that important position?

"But," you say, "that is not so. *My* wife is a clever house keeper—she has never received a day's tuition in housecraft and my home is a model." Lucky man! I congratulate you and I also agree with you that this is the case in thousands of instances—but why? Because the woman of cultured brain and long-continued education applies herself to her task when it becomes necessary, and so great is her power of intuition and so clever is her innate faculty that she does make a success of it—but let me tell you that your wife would make an equal success of any other office. She would run a factory or a lunatic asylum or an agricultural college equally well—but *she* did not leave school at thirteen or fourteen and go directly into wage-earning work. I am speaking of millions not of thousands. Are you equally sure of the capacity of the wife of the working man to run his home successfully on a limited wage, with no outside help, with possibly several little children, with probably failing health through insufficient food and overwork, with despair because of her inability to make both ends meet? Do you wonder that homes are unhappy because badly managed, that babies die because ignorantly fed and nursed, that debt and poverty take the heart out of many a hundred poor women who cannot compass the impossible, who cannot make 18s. do the work of £1?

I do not for one moment think that the teaching of housecraft is going to raise wages or make housing conditions better, but I do say there is such a thing as divine discontent, and if our girls learned how to make a home happy and comfortable it might stimulate them to greater efforts to improve their condition later to bring thrift and knowledge to the problem. The mother of the future would not in loving ignorance do her baby to death with food it cannot digest; she would realise that there are ways and means of economising that *her* mother did not know, that simple foods are better than fish, chips and pickles, that the best means of keeping her husband from the public-house is to make his home comfortable, his food eatable, his children and herself clean and cheerful.

But let me say one word for the working-class mother of the present day. I often look with astonishment and admiration at the self sacrifice of many of the mothers in the homes of the poorly paid workers. Quietly, cheerfully, untiringly, they spend their days and a large part of their nights in providing comfortable food and clothing for their husbands and children.

Let us try to assist them by making their girls more helpful, more resourceful, more understanding.

For many years Bradford has led the way in this and many other forms of educational experiment. Let us hope that soon other Education Authorities will follow in the wise footsteps of Bradford and provide facilities for such a necessary form of manual instruction. In conclusion, I need not remind you that the difficulties in the way are largely financial ones—but there is a good time coming. Let the Board of Education make housecraft teaching compulsory, let the Treasury assist with a grant in aid towards providing the necessary facilities for teaching, and all other difficulties will very soon vanish.

## DESIDERATA IN ELEMENTARY SCHOOLS.

### UPPER STANDARD CLASSES: A PLEA FOR A MORE GENEROUS VIEW OF THEIR NECESSARY EQUIPMENT AND ORGANISATION.

By Mr. F. W. RICHARDSON, B.Sc.
(Newcastle-on-Tyne).

In this short paper I wish to approach the question from the position of town areas, and I am aware that some Education Authorities have anticipated much or all that is included in the paper; but these authorities are so few that the matter will well bear discussion.

While not underestimating the importance of the years spent in the lower classes of our schools, I think we are all agreed that these formative years (twelve to fourteen) in the school life of boys and girls are all important. These are the years when the influence of school is greatest. It is that part of elementary education for which the community will get best value for money expended. Once establish a respect and love of learning in the minds of young people, and train them in good habits, so that they leave school with the desire to learn more, then the best has been done for them.

Our system of instruction and training during these years should therefore be as perfect as we can make it.

First, as regards accommodation and equipment. In these respects, the Infants' and Junior Schools have made more progress of late years than the Senior Schools. Of course, the Senior Schools have long had centres for cookery, laundry, and handicraft; but even these are optional. There are still towns without a single manual instruction centre, and towns where many upper standard girls are outside the provision made for cookery and laundry instruction. Now these subjects have long passed the experimental stage; we are all agreed on their paramount importance in our schemes for training young people. It is high time then that the Board of Education made such practical work compulsory for all school children over twelve years of age.

Again, I think the time has arrived when a laboratory for practical science training should form part of the necessary accommodation of every upper standard school. In the lower classes it is possible to plan suitable Nature Study schemes for which individual children may conveniently be supplied with specimens; but in the top classes, where the principles of physics and general science are dealt with, such demonstration as the classroom affords falls far short of the possibilities of science teaching. We must as far as possible make children handle and examine real things, for the purpose of giving definite training to their powers of acquiring knowledge; indeed, this training of the executive powers of children in practical work is the only certain way of storing the mind with clearly related knowledge, and of giving children the power to think definitely.

Such a room would, of course, also serve for construction work of all kinds.

The position of drawing has changed of late years. It is no mere recreative subject now, but one of first-rate importance for training the powers of observation—the reasoning powers, for developing an appreciation of what is beautiful in the world around us, and of affording a ready method of expression and self-expression.

Drawing properly taught is an invaluable subject; and its importance warrants proper school conditions. The ordinary class room, with its complement of desks, is not a suitable place for teaching drawing. The children should be placed in small groups in front of objects—below the eye if required, in order to render accurate observation possible; and with the light coming from one side. We do not rest content with mere outline nowadays, but the whole appearance of natural objects is expressed—form and mass, with varying shades and colours. Look at a coloured vase in a room with light coming in two or three directions. It appears striped like a zebra. Under natural conditions it has no such appearance. The room then can introduce difficulties into teaching the subject, and place limitations on the efficiency of the teaching. A room properly furnished and situated is certainly required for the teaching of drawing.

My next point deals with the grouping of classes. In many schools, owing to their size, and the special difficulties of the district, the top two or three classes are grouped under one teacher. Now, while such cannot very well be avoided in rural areas, in fully 75 per cent. of town schools such grouping can be met by the setting up of selected central schools for upper classes, and gathering these small units together. With the best of teaching, classes of groups result in waste of effort. It may be urged that such a class must be worked in sections, that it compels the teacher to train the sections in habits of private study. We know how common the fault is—the teacher will do too much himself and leave too little for the pupils, forgetting that it is this self-activity of the pupils in study during the formative years that is to give them powers of self-education after school days are over. But a single class worked in sections is always better taught than the composite class. And of course it is impossible to treat all subjects thus, so that the progress of the grouped class depends on the intelligence of the lower division. And children are quick to recognise any shortage of effort or time given by the teacher, and to use such as a reason for leaving school. Children—boys especially—do not like being associated in class with those whom they consider their juniors. The few promoted ones coming up among them is a different case altogether. Then there is the difficulty of maintaining a fitting number for a teacher of the top class, and the result is that children are promoted to this top class before they are fit for it. My sympathy goes out to the child promoted too rapidly; he gets little pleasure out of his school work. Then we have the problem of the small group of children—the Ex.-VII. Sometimes the head teacher is responsible for them; and we know what that means with the many other duties to attend to; in other cases they are grouped with a lower class. But there they are; they are near the age of exemption and will leave soon. And they do leave as soon as they are able to slip out of school. Candidly, these children are not wanted in many schools, and they are given little encouragement to stay. Yet these months constitute the most valuable period of their school lives. We ought to give every encouragement for these children to stay right up to the apprenticeship age (i.e., "turned fifteen"), and

I am convinced that if suitable instruction and more generous facilities are provided an increasing number of children will stay beyond the bye-law age.

Now how are we to meet this dual problem of grouped classes and of giving every inducement to pupils to remain one or two years after the age of exemption? The central upper standard school meets the difficulty best, I think. It is only touching the fringe of the problem, unless compulsory transfer takes place. Merely to set up the central schools to attract the enterprising pupil is to leave the difficulty behind in the small schools. Of course, it will be urged that more liberal staffing would meet the case; but it is not a question of staffing only: separate rooms for the small units and more generous equipment are required, and such are impossible in these small schools.

The objection is raised that it is unwise to move children for the last year or two of their school life. I believe that for the sake of those who are to remain for two or three years the policy is worth carrying out. After all the change is not much greater than going from one teacher to another in the same school; and boys and girls are very adaptable, and soon settle down to new surroundings. To join the new school would in the long run, I think, prove a good training in world experience, and the larger school, with its higher and more complex school-life, would soon have attractions to compensate.

The last point concerns curriculum. The first two years (corresponding with Standards VI. and VII.) would follow an ordinary school course on the generous lines suggested in the paper. For the third (and fourth), the curriculum which will combine sound and broad educational training with the strongest interest is surely the best. Experience shows that where parents see direct preparation for vocation, increasing numbers are willing for school life to be extended. The numbers are small, I grant, but public opinion is being slowly educated. As long as a good scheme of English (including literature and composition) forms the main subject of the time table, the introduction of vocational subjects at this stage does not affect the educational position. The curriculum must add interest year by year to school work, and the strongest reason is given to pupils and parents to extend school life by giving the curriculum a vocational bias. To retain our boys and girls in schools during these formative years should be one of our chief aims in elementary education.

## THE NEW EDUCATION BILL.

By Mr. C. W. CROOK, B.A., B.Sc.
(Wood Green, London).

The promise of an Education Bill has caused the Executive of the National Union of Teachers to consider the points which in its opinion are necessary for the further improvement of Elementary Education.

These range over such a wide field and open up so many avenues of discussion that I have thought it best merely to state their findings, and to leave any elaboration of them to the meeting. The Executive decided to urge that the Bill:

(*a*) "Exclude 'Contracting Out.'"

(*b*) "Exclude 'Right of Entry.'"

(*c*) "Include 'Compensation for Dispossessed Teachers.'"

(*d*) "Propose the establishment of a general Court of Appeal, and that particular emphasis be placed on the power of such Court to deal with dismissal on religious grounds."

(*e*) "Include provision for the abolition of the Acting Teachers' Examination."

(*f*) "Provide for the abolition of half-time."

(*g*) "Provide for the payment of grants in respect of areas and not in respect if individual schools, and that among the factors determining the grant shall be—

- (*a*) Number on roll.
- (*b*) Efficiency of building and equipment.
- (*c*) Efficiency of teaching staff, both as regards quality and quantity.
- (*d*) Salaries paid to teaching staff.
- (*e*) Rateable value of the area and special difficulties therein."

(*h*) "Provide that no class exceed 40 on the roll, for the increase of the floor space to 15 sq. ft. and for the same hygienic conditions as are found in the Building Regulations for Secondary Schools."

(*i*) "Include a provision empowering Local Authorities to make Bye-Laws requiring the attendance of children up to the age of 15, but that no child shall be exempt from attendance under the age of 14."

(*j*) "Contain ample provision for the Secondary Education of scholars who show themselves fit to receive it."

(*k*) "Provide for special financial consideration for rural and small schools."

(*l*) "Provide that there be no differentiation as between town and country in the standard of education, leaving age and other conditions of leaving, and quality of the recognised staff."

(*m*) "Include provision of playing fields for Elementary Schools."

(*n*) "Provide for the abolition of the Labour Examination."

(*o*) "Provide for the extension of feeding of school children to all weekdays, but that the cost of such meals should not be borne by the education rate."

(*p*) "Provide for the payment of all grants on number on roll instead of average attendance."

(*q*) "Provide for the co-optation of an Elementary Teacher on every Education Committee."

(*s*) "Provide for the extension of the system of medical treatment of school children, but that the cost thereof should not be borne by the education rate."

(*t*) "Include a provision empowering Local Authorities to make Bye-Laws requiring attendance at Continuation Schools or classes with limitation as to hours of labour."

Those lettered (*a*) to (*l*) the Executive consider of special importance.

## NATURE STUDY IN TOWN ELEMENTARY SCHOOLS.

By Mr. W. B. CRUMP, M.A.
(Halifax).

This is neither the time nor the place to elaborate reasons for giving Nature Study a place in the curriculum of Elementary Schools. Those who see in Nature Knowledge an avenue to intellectual culture that the youngest may enter, recognise also that it promises to be an effective means of counteracting some of the evils of town life. If Nature Study does not lead to love of Nature it is worthless. But if it awakens inquiry, creates new interests, reveals a new world; if it sends the youth into the country, the grown man into his allotment, then it is justified. Long hours of labour and squalid surroundings have extinguished all knowledge of Nature for the town dweller. He is now gaining more leisure, but the monotony of his work must perforce remain unabated. It behoves the schools and other agencies to give the interests in life that will fill this leisure with sane recreation. Nature study is only one of them, but experience proves it is a potent one. There is no more enthusiastic naturalist than the artisan when his interest is aroused. But in the past the making of him has been fortuitous.

### Methods of Nature Study.

If the primary object of Nature Study is to implant a love of Nature the methods employed must not be didactic. The environment of the class room with its appeal to the printed page, to authority, is itself an obstacle that is not lightly overcome. Wholly at the outset, largely throughout, Nature Study is merely seeing and questioning; observation with a view to understanding, or even pure observation for the joy of seeing. Drawing, in some form or other, stimulates and focuses observation, whilst it avoids the barren wastes of formal description, so that drawing is the handmaid of Nature Study. But as soon as the representation of the object is the primary purpose, the lesson is rightly regarded as one in drawing. The two are complementary.

But real Nature Study cannot be pursued wholly in the classroom; it must be carried into the woods and fields. Love of Nature only comes by enjoyment of Nature. If a child has never heard a skylark singing, never chased a butterfly, never scented the new-mown hay, never dabbled in the brook, it knows nought of Nature. The problem that awaits solution is to bring the town child to Nature,* for we cannot truly bring Nature to the child. All our expedients and aids in the classroom, useful as they are, cannot beget the love that is born of contact with Nature.

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* One successful solution, in the case of Secondary Schools, is described by Miss Mary A. Johnstone in "A School Week in the Country: Grange Road Secondary School, Bradford." Education Pamphlets No. 21.

What shall we take as the basis of a course? The answer is—anything that satisfies three tests:—

1. It must be seasonable, available, or to be seen at the time.
2. It must be found or seen in the home district.
3. The teacher must have some knowledge of it, and preferably be interested in it.

Other considerations must be taken into account in the organisation of a school; some subjects and aspects come more properly at a later stage than others; at each stage the course should be varied; there must be some oversight to prevent undue repetition. But a scheme of instruction should be of the loosest possible texture, and readily varied with circumstances, or it may offend against one or other of the primary canons. It would be easy to quote cases where all are infringed.

There is here inexhaustible material: the sky, the weather; the hills, the rocks, the brooks; trees, flowers, and fruits; insects in air and ground and water, birds in summer and winter; earthworm and snail, the coney on the hills, the foal by its mother's side.

Without being desultory, Nature Study should not be systematic science. A scheme that runs through the gamut of elementary botany in as many standards; that describes a leaf under twelve heads; that requires teasel, butcher's-broom, barberry, red bryony, and other plants unknown in the district to be used as illustrations; such a scheme is a hindrance and not a help to Nature Study. Nor are matters bettered when a head-teacher gives the class teacher a subject for a lesson a week beforehand. It results in a conscientious teacher, conscious of his ignorance, and labouring to remove it, overwhelming his class with a mass of ill-digested information.

Both systems ignore the teacher. Let us rather find a teacher who has some love of Nature in his soul, and let us give him a free hand and abundant opportunities for widening his own knowledge. Let him talk about what he knows; it hardly matters what so long as the class can see and handle and draw the thing under discussion. He and they will develop together and the love of Nature in both teacher and taught.

## Aids to Nature Study.

Town schools are so situated that there is a pressing need for organising the aids to promote Nature Study. This has been realised in London and some others towns, and museums and parks are being utilised; but elsewhere the facilities offered are either inadequate, or there is no provision at all. A class must be supplied with living or fresh specimens. To ask the teacher to obtain all he requires is unreasonable; he has not always the opportunity, even if he knows where to obtain it. Further than this, the demand for material to supply numerous large elementary schools must impoverish still further the diminishing flora and fauna of the town fringe. We are defeating the ends of Nature Study and despoiling Nature at one stroke. Most of all is this apparent when the children are themselves encouraged or instructed to collect specimens for class purposes. It is not Nature lovers alone who complain of the ruthless onslaughts on trees by children, who are, after their manner, collecting what ought to be provided for them.

The other difficulty of town schools is to give the children any first-hand knowledge of the country. The difficulty varies with both town and school. But the real country is becoming so remote and children's excursions so limited in extent that we must be prepared to provide substitutes for the country within the town area, or on its outskirts.

Let us turn now to consider what can be done, in some cases what is done, to overcome these difficulties, and to give the teacher full facilities for a study of Nature.

(i) *What the teacher can do.*

A teacher can himself do much with simple materials. With a few boxes, jars, plant pots, and saucers he may raise seedlings of oak, sycamore, beech, hazel, and gorse, or flower spring bulbs, and have the material for many lessons and experiments. The "fibre" used for bulbs makes a handy compost for raising seeds of all kinds. Aquaria, if they are small and numerous, are invaluable aids. But they must be both so that their contents can be seen by a class, and because the carnivora will prey on the weaker unless they are segregated. With a supply of glass jars the development of the frog alone furnishes a four months' bye-course of Nature Study. Newts, sticklebacks, water beetles, caddis worms, fresh-water snails, leeches, larvæ of dragon flies, and other insects as they come to hand, may all be kept and studied. Rocks (granite, sandstone, limestone, chalk, slate, clay) can be accumulated, dried fruits and seeds garnered, birds' feathers and wings saved, skulls and leg bones of rabbits and poultry cleaned and stored, insects (cabbage white, currant moth) reared and preserved, and so a small working museum comes into being.

If there is a school garden it can be made subservient to Nature Study and may influence the course considerably.

School excursions present too many difficulties to be discussed here, and unless a school is favourably situated some other plan must be adopted. But the Boy Scout movement affords a very real opportunity of promoting a love of Nature. Through it boys who would otherwise hardly ever escape from the mean streets of the town are finding their way into the country. There they need the helping hand to direct them to observation of Nature. Many a teacher already knows that the stimulus of the Naturalist Badge is not to be despised as an aid to Nature Study.

One other thing the teacher will do. He will join a Naturalists' Society, for if it justifies its existence at all he will get help and inspiration for his work.

(ii) *What the Education Authorities ought to do.*

Many towns already possess institutions that should be invaluable aids to Nature Study. A few make good use of them, but more frequently libraries, museums and parks are links that still remain to be forged into the chain of a town's educational system. Yet museums and parks, if they were put to their full use, would remove most of the difficulties that beset the study of Nature in town schools.

There are three urgent needs:—

(a) The provision of training for teachers in Nature Study.

(b) The supply of material for study in schools.

(c) The provision of wild gardens, or city "nature reserves," accessible to schools.

In suggesting how these needs may be met by the aid of museums and parks, it is well to recognise that local circumstances must be considered in deciding the course to be adopted in any locality. Where a town museum exists already it seems marked out as the obvious centre for Nature Study.

(a) The need of some regular class or course in Nature Study for the benefit of teachers cannot be overlooked. Some Authorities already make such provision; others do nothing. Keighley may be selected as an example of an industrial town that has solved the problem almost in an ideal way. To begin with, Keighley possesses a museum that puts local natural history in the foreground, and that has been built up by "live" naturalists. Then Keighley believes that a museum needs a curator, and one who can explain as well as care for the collections. So the museum has become the centre of Nature Study in the town, and the curator conducts Nature Study classes all the winter and organises excursions in the summer. There are forty or fifty teachers attending these classes each year; many continue to do so year after year, and become enthusiastic students of nature. The method pursued by the curator (Mr. Rosse Butterfield) can be gathered from a syllabus of a winter course, such as is appended to this paper. It seems exactly calculated to meet the needs of teachers.

(b) A museum, such as that at Keighley, also serves excellently as a centre for the distribution of material and specimens for class use. In fact, a museum is the only possible agency to undertake the distribution of prepared specimens, correlated to illustrate a definite theme. A modern museum will do more than this; it will lend living animals. But as a rule a museum can only lend; it cannot supply much material that will be destroyed by class use. It should be the function of the Parks Committee to grow and supply to the schools of the town the botanical material that ought to be available in abundance so as to be placed in the hands of every child. It would be a great boon in any town if a teacher could obtain on application at a park a score of twigs of beech, or ash, or horse-chestnut, or flowers of campion, or hairbell, or broom. It is high time that a check was put on the despoliation of the country in the name of Nature Study, and the supply of suitable plants through the parks offers no insuperable difficulties; it is only a matter of organisation.

(c) This leads naturally to the question whether some of our town parks, within easy reach of the schools, could not be converted wholly or part into wild gardens. Let us—for the sake of the children—have at least in some of them a corner where buttercups and dandelions grow in the grass, where marsh marigolds and cuckoo flower blow, where primroses and violets, hairbells and foxgloves can tell the story of the seasons. Who would not welcome gorse or heather, wild rose and honeysuckle, in place of privet and poplar, golden elder and rhododendron everywhere and always?

There are even greater possibilities. Halifax, for example, has accepted as a gift a fine rocky wooded slope right within its borders. At least six schools could easily make use of the wood for Nature Study. But at present the wood suffers from two centuries of neglect and some smoke. It is barren and decadent; but even now it is a genuine antique, a natural plant association, that only needs tending to bring about its rejuvenescence. But what Halifax does is to set about destroying its natural character by planting alien poplars and gardeners' stuff. If Halifax will only restore the woodland canopy and replace the impoverished ground flora it can re-create a healthy oak wood—a nature reserve for the use of its schools. Why not? It may be a dream, but

Each age is a dream that is dying,
Or one that is coming to birth.

## APPENDIX.

### BOROUGH OF KEIGHLEY EDUCATION COMMITTEE:

### Nature Study Class at the Keighley Museum.
### Syllabus of Lessons for Teachers.

### WINTER SEASON, 1911-12.

1911.
Oct. 6.—Autumn Leaves.
13.—Ivy. An Introduction to the Study of Autumn Flowers.
20.—Ruddy Warty-caps. Edible Fungi.
27.—The Zebra Mussel. Bivalve Mollusca.
Nov. 3.—Peat. Decaying Vegetation.
10.—Grey Palings. Lichens.
17.—The Redbreast. "Resident" Birds.
24.—Common Hair Moss. Mosses.
Dec. 1.—Winter Chrysalids. Butterflies and Moths.
8.—Walnuts and Filberts. Fruits.
1912.
Jan. 12.—Snow Crystals. Crystallisation.
19.—Scots Pine. Evergreen Trees.
26.—The Herring. Marine Fishes.
Feb. 2.—Cherry Galls. Gall Insects.
9.—Fieldfares and Redwings. "Winter Immigrants."
16.—Boulder Clay. Glacial Geology.
23.—The Snowdrop. Early Flowers.
March 1.—Mole and Squirrel. Burrowing and Climbing Animals.
8.—A Flint Arrow-head. Prehistoric Man.
15.—Queen Humble Bees. Social Bees.
22.—The Wych Elm. Bisexual Flowers.
29.—The Celandine.

The lessons will be given in the Lecture Room, Museum, on Thursdays and Fridays from 6 to 7.15 p.m.

Teachers outside the Borough of Keighley may join the class on payment of a fee of 2s. 6d.

The work of the course will be largely of a practical character, and abundance of material will be furnished.

Each lesson will be illustrated with blackboard drawings and specimens. Ample time will be allowed for making notes, examining specimens and asking questions.

The instruction will be conducted by the Curator of the Museum (Mr. Rosse Butterfield) to whom all communications should be addressed.

## SOME POSSIBLE EFFECTS OF THE COMING COMPULSORY CONTINUATION SCHOOLS ON ELEMENTARY DEPARTMENTS.

By MR. W. A. FINCH (Birstall).

It was in the summer of 1903 that I heard Professor Patrick Geddes declare that the spectacle presented in every Education Bureau in Europe and America was of a despairing chief, with his hands in his hair, exclaiming, "Who will show us any good?" The ten years have raced by and now, whatever the spectacle within the bureaux, within the schools there has been shown us much good, we have learned to view the school's function more broadly, and we realise more acutely the obstacles to progress.

As it is of some of these obstacles and of the coming opportunity for their removal that I wish to speak, perhaps I cannot more readily get under way than by referring to those "two currents in English educational opinion," which Mr. Sadler recently told us "are apparent at present. First," he says, "there is a strong current of conviction that sooner or later the logic of facts will require us to make attendance at Continuation Schools compulsory for boys and girls during the years of adolescence. The second current of conviction is that there is something to be done in another field of education, preparatory to such a measure—the systematic though gradual reform of the Elementary School." If, as Mr. Sadler avers, "we are gradually settling down to the belief that in the end attendance at the Continuation Schools will be obligatory, and on the other hand are bringing ourselves to the conclusion that a great deal more money will have to be spent upon Elementary Education," then, doubtless, our Educationists have considered and agreed upon, though not yet disclosed, some guiding principles of procedure. Already Lord Haldane and Mr. Pease are wearying us with assurances of the Government's cash sympathy, so that before long the opportunity and the necessity will be upon the Authorities to take the first steps on the road towards the reform of the Elementary Departments and the provision of Continuation Schools. "A great deal more money will have to be spent," and as economy, besides a firm purpose of frugality, implies looking ahead, our leaders, I repeat, must have already faced this double problem and sketched out a general course of action to be urged upon Authorities, whereby structural reduplication, over-lapping of curricula, and waste of teaching power may be avoided. But while they, as prudent men, keep this to themselves for the present, here am I, not only essaying to forecast some effects on the Elementary Departments of the coming Continuation Schools, but proposing also to rush in and suggest an arrangement which, while involving considerable expenditure in one direction, would secure some educational advantages and economies and obviate a wasteful alternative outlay.

It appears to me, then, that the coming of the obligatory Continuation School calls for a new defining of "Elementary" work, a closer adjustment of the Elementary or Primary School to its true functions within its natural limits. So long as it has been the custom for four-fifths or nine-tenths of our children to pass from school influence for ever at thirteen, there has been a natural but a mistaken endeavour to "speed up" at all stages. Under the pressure of "now or never" motives certain work has been attempted, has found a place in the curriculum, without due inquiry made as to its suitability for the child at his stage of development. We may no longer, as formerly under Code compulsion, waste time, temper, and energy, obfuscating nine-year-olds with abstract nouns and adverbs of degree; but enthusiasts for the culture of our top classes—children of the advanced age of twelve—have been known to devise for them, because it was "now or never," literary or historical courses far more suitable for fifteens. Yet that is not so bad as trailing young children, still delighted with a "Saturday penny," through the intricacies of Stock Exchange transactions—and we've all *had* to do that. Indeed, to-day I find the British Association Committee's "Syllabus of Work in Elementary Experimental Science," includes such items as :—"Definition of Unit of Heat. . . . . distinction between heat and hotness . . . . calculation of heat lost and gained by quantities of water when cooled or warmed. The heat absorbed by a copper vessel in which hot and cold water are mixed. . . . Heat energy, like matter, indestructible." Now, of course, it is quite possible to teach these things to seventh standard children; the point is whether at twelve our boys and girls are best employed in pursuing such inquiries.

Again, at least one Northern Education Authority prescribes a Training-in-Citizenship course from sections of which I select these lesson topics; "Society as an Organism"; "The Claims of Conscience (individual and social)"; "The Value and Beauty of an Ideal for Life"; "The need to Know Ourselves and to Test Our Moral Progress"—at 12!

Then for Religious Instruction in Council Schools under the same Authority, for one item Standard III. has, "The Sermon on the Mount," and Standard VI. for another, "The Book of Isaiah." I fancy the "now or never" motive must have prevailed when these syllabuses were drafted.

And to this same motive, I suppose, must be attributed that urgency—no mere sanction but systematic pressure—of some Authorities for double quick promotions of children through the standards. For the precocious five per cent. everyone admits these rapid transfers are admirable, and a hastening once in their career may be desirable for another ten per cent. But any attempt to force the pace, to insist that tadpoles shall function as frogs, results in disaster later on. For just as the "now or never" subjects are exactly those we find ourselves compelled to teach in the worst way, by doing practically all the work ourselves, so to the immature pupil, advanced before he is ready, the things studied in the higher class, instead of stimulating and exercising his mental powers, become mere authoritative impositions of material he has no means of assimilating. He sits and looks and listens, retains for a time the words he hears and the new forms presented. But as these awake within him no images of related experiences, linking up is impossible, no real gain is made, and he has to bear up under, and harden himself against, his teacher's reproachful anxiety and ultimate despair.

When, however, all our children remain under (part time) instruction till sixteen or seventeen, and the Elementary Department, ceasing to be *the* school, takes its new place within a wider organisation, the "now or never" motive will naturally recede and the time now wasted, or worse, become available for more profitable activities. We shall be free then to adhere more strictly to the task proper to the elementary teacher, of directing and promoting the child's own activities, physical, emotional, and intellectual, of fostering and sustaining his passion to *do*—to imitate and inquire; to win health by vigorous exercise; to co-ordinate his movements till ease and skill arrive; to use hands and tools, and measure and weigh; to construct and count the cost; to find information and the use of books; to record and express in various media and with pen and pencil; to live in his imaginary world as well as in this, in the past and in the distant, and even to begin to see the near that is so far. And in all this we shall be helping him to build up strong interests through work done and knowledge won, to discover himself a citizen in a world of fellow-workers, and to secure for himself unconsciously "the necessary and the wherewith" of future intellectual and sympathetic advance.

Meantime, the anticipation of a clear field in the reformed elementary department for work of this description may indeed afford an attractive prospect, but, though actualised to some degree in exceptional cases here and there—as boldly perhaps at Sompting and Mixenden as in Rome—it must, for the average teacher, faced by fifty or sixty children, cramped in their desks and within their ten square feet, prove merely a tantalising mirage. His conditions force him to place self-repression, silence, and uniformity high among the desirable school qualities, while for any quixotic attempt he may make to encourage among his crowd the throbbing enthusiasms, the lively inquiries, the jolly displays of individual powers, and the moralising enterprises of co-operative effort, he must pay a high price in nerve rack and exhaustion, and be prepared to foot still another bill when his class is examined.

Nevertheless, we not only admit, we insist, that teaching of this high order and conditions that make it possible sum up the desiderata of the Elementary School.

For those, then, who are agreed that our Elementary Schools are to become the arenas of multiplied activities, and are also agreed that it is folly to hope for this where, under one teacher, fifty or sixty children are necessarily kept quiet in their desks, it follows that the initial reform in many cases will have to be the provision of more room. Now the classrooms that till recently most authorities have continued to build have been for sixties, though all teachers are at one with Mr. Sadler, "himself an old teacher, that they cannot really get to know more than thirty children in their classes at the same time, thirty being a large number when they are individualising their work." Yet perhaps it may turn out that after all these authorities have "builded better than they knew." For these "sixty-rooms," cleared of half their desks, and these replaced by trestle tables or work benches, may prove well adapted for the activities of thirty. Since frequent change and much free movement are indispensable to the healthy and happy development of young children, class-rooms so arranged would offer great advantages over the single work-room some advocate for the use of all the classes in turn. Though for older pupils, needing more elaborate equipment and able to spend an hour or two at a time at the bench, a common work-room is the right and economical arrangement, young children, up to the fourth standard at least, should be able to move readily and frequently from desk to bench and back again. Besides, these "sixty-rooms" are already with us and will continue with us for a long while, they will not accommodate two teachers and two classes of thirty, and economy demands that they shall be put to the best possible use.

"But," some one will say, "what is to become of the children displaced in the process of reducing these classes to thirty? There'll be cases where you'll need almost to double your accommodation!" Yes, it is evidently going to be no mere question of *room,* but of *rooms,* and unless some way can be devised whereby the number of additional class-rooms can be reduced, we shall have to be prepared to sink here, in structural alterations alone, a big share of that money it is admitted will have to be spent on Elementary School reform. Too big a share when we remember that smaller classes necessarily imply more teachers. Some relief, no doubt, might be found in many cases by keeping the first standard children in the Infant Department—where I suppose they ought always to continue till, at about seven and a half, they begin to approach "the period of stability." But the problem remaining is still so formidable that instead of attacking it at once I will ask leave to shelve it for a time while we turn to consider one feature of any rightly constituted Central Continuation School.

If the Continuation Schools are to accomplish only the comparatively narrow task the Preparatory Trades Schools appear to have set themselves "of liberating and developing the qualitative abilities of our future artisans," they should be no mere congeries of classes, but true schools with the usual corporate functions. But more emphatically is this desirable if they are to become effective instruments for the production of robust, intelligent, and morally enlightened citizens. Again, a close knowledge of the individual attainments, capacities, and vocational fitnesses of the pupils must be gradually ascertained, so that in the later stages training may be differentiated accordingly and to suit the main industrial requirements of the locality. The pupils, therefore, should enter the Continuation Schools—drafted to the centre from the group of elementary departments that feed it—a year or two before they commence part-time employment. And, for several reasons, the best moment for transfer, I am convinced, would be at the stage of completed Standard V.—stage of development rather than age reached being, of course, the qualification. In average cases, when double-quick promotions of normal children have ceased, this end of Standard V. will approximate to the middle of the twelfth year. This I find is the age Mr. Cyril Jackson selects as the best in most cases for the transference of scholars to Secondary Schools. It is also the average age of the boys admitted to the Day Preparatory Trades Schools of Leeds.

At this stage it is no longer specially desirable, as before, that they, having completed the fifth standard, should carry on most of their work under one and the same teacher, nor that their lessons should all be brief. The Central School to which they are drafted will have a departmental basis, and there, under teachers qualified by specialisation to deal without undue strain with their more advanced requirements, relays of boys and girls will alternate the usual English subjects with spells in the common workshops, laboratory, art room, garden, kitchen, sewing room, laundry, and gymnasium; and Ruskin's prophecy in "Fors Clavigera" be economically fulfilled. At eleven and a half, too, the end of that "period of stability" we spoke of children approaching soon after seven and a half, is drawing near; consequently, before they have been long in their new environment the dawn of the briefer period of pre-adolescence will be upon them, when it is salutary to be juniors and have big fellows to look up to, and when new methods of teaching and of discipline are called for.

Let us now turn to our shelved problem, the provision of rooms for the many small classes and the multiplied activities of the reformed Elementary School. Do we not find in that *impasse* a strong additional ground for making this early transfer? For once conceive the removal *en bloc* of all Standards VI. and VII. from the elementary departments and in many a case, impracticable before, a way out begins to appear. In some instances, indeed, this relief, together with the detention of the first standard in the Infant Department, would almost suffice, while in all it would greatly reduce structural outlay. "But," you at once object, "at what a cost in the way of Continuation School provision!"

I submit, however, that it is indifferent whether the increased outlay mainly focuses at a Central School or is spread over a group of contributory departments. The one consideration is the return obtained on the money spent. And I think few can fail to see the economy as well as the advantages to follow from a concentration of pupils—some full-time attenders and others part-timers—sufficient to give, in well-found premises, full employment to a competent staff. While to those who would rigidly calculate the costliness of such a Central School as against a system of retained "tops," I would recommend the following points to be kept clearly in mind:—

First.—That if individual schools retain their "tops" we must allow accommodation and equipment costs for the increased numbers and the more advanced work a longer school age implies.

Second.—That the retention of these "tops" itself increases the number of additional rooms required for the accommodation of classes of reduced size; and

Third.—That there would still remain the problem of finding accommodation and equipment for the Continuation School work we assume to be coming.

In order to give some definiteness to this question of comparative costliness, or of my notion of it, I will now suppose a certain area to comprise eight schools and that on an average these would require, to fit them to the new conditions and with retained "tops," an outlay of £900 per school—£7.200 altogether. Then, if I may assume that £250 would suffice on the average if all the "tops" could be drafted to a Central School, it follows that until £5.000 has been expended towards the provision of this school, its cost for my present purpose must be counted as nil. And in the light of the foregoing three points I scarcely think there is any exaggeration here of the difference.

I know I may be severely handled for not providing a named area, so that schools and estimated outlay might be checked. But in no two areas would the figures be the same, though the general nature of the problem would. So my purpose is better served if the emphasis is laid rather on the educational advantages of establishing a plant and a teaching staff designed at once to meet Continuation School requirements and these of day pupils who, having passed the fifth standard, are ready for workshop, laboratory, cookery, and other instruction only economically possible at a "Centre." Such a Central School, on a departmental basis, once in being you have in its specialising staff the personnel qualified for each relay of boys and girls in full time attendance, and likewise competent to give such instruction to the Continuation Classes—whether with a commercial, a manufacturing, or a rural bias—as will fit the better pupils to proceed later on to a Technical or Agricultural College.

Finally, for the restricted range of standards in the preparatory departments we may anticipate the evolution of a definite type of teacher, specialised as happily for the training of children during the "period of stability" as are our Infant Teachers to-day for their special work. And should this development eventually agitate what some of us look back upon as the placid waters of the Training College, well, even there it is now admitted that differentiation is the hall mark of progress.

To summarise strictly from the preparatory department's standpoint: The chief Elementary School desideratum to-day is the arrival of the obligatory Continuation School. It will probably modify the preparatory curriculum, allowing economical postponements and affording time for the fuller development of physical, mental, and moral activities. Opportunities for each type of teacher to find a congenial sphere will be increased, and if the properly constituted Continuation School—whether a new erection or an adaptation of existing premises—also sets free one or more rooms in the present buildings, smaller classes may then be accommodated, so that at a minimum structural outlay most of the desiderata to-day above the horizon may be trusted to come almost of themselves, given a sufficient, a well-educated, and a more highly specialised staff.

## DESIDERATA IN ELEMENTARY EDUCATION.
## RURAL SCHOOLS.

By Mr. JONAS BRADLEY
(Stanbury).

In any scheme of education it is of the utmost importance that the child should be *guided,* not pushed or crammed, and that he should be allowed and encouraged to *discover* for himself. His lessons should, therefore, be observation and object lessons as far as possible. From his immediate surroundings, which, of course, are very different from those of a town, the country child has a great variety of objects and phenomena upon which such lessons may be based. Nor need these lessons be confined only to the so-called *object lesson.* There is ample opportunity for applying this method to every branch of the school curriculum.

Taking, then, this principle as the bed-rock of our school method, we proceed to select suitable objects and prepare a scheme of lessons adapted to the ages and capabilities of the children. The ever-changing face of Nature—birds, flowers, trees, insects, sky, clouds, land, water—will furnish infinite variety of subjects (and objects) upon which such lessons may be based. In small schools, where two or three groups (or standards) are combined under one teacher, it is necessary to prepare a three-year scheme in order to avoid a repetition of lessons during the stay of any one child in that class.

During the past few years there has been a welcome relaxation in the stringency of the regulations as to grouping and treatment of subjects. Even yet, however, it is advisable that more freedom should be given to the individual teacher to formulate his schemes according to the locality in which he lives—for no one ought to know better than the intelligent teacher who lives in the district what the requirements of that neighbourhood are, and what will be most conducive to the development of the intelligence of the child.

Thus at Stanbury a few examples of birds, flowers, stones, or other objects which the children pass daily, at one time of the year or another, on their way to and from school, are studied. In the upper division of the school each child has a notebook in which daily records are made of the objects under observation as well as of natural phenomena, such as barometer readings, thermometer readings (maximum, minimum, in school, outside), rainfall, direction and force of wind (approximate), and weather. They also make notes of arrivals and departures of birds and animals, first appearances of flowers, buds, and leaves, as well as short entries about current events learnt from the daily newspaper—a summary of the news being glanced over each day and the places named being pointed out by the children in turns—one child pointing out the places named on a large map of the world, another on maps of European countries, and a third on larger scale maps of the British Islands or the County of York. In this particular I would most earnestly plead for more latitude. I have found nothing that gives the children a more intelligent and comprehensive grip of the bigger world outside the child's limited horizon than this chat about the newspaper reports of current events and the morning's correspondence.

This is done, it will be observed, in such a manner as to teach the child to watch and think about these things—and what is there in his surroundings that more readily arrests attention than the "wick" things about him? Teach him, therefore, to know something of each object, to watch it at various times of the year, and make drawings, measurements, and other observations, and thus let him *discover* for himself. If you begin to lecture him you are undone; guide him, watch him, correct any incorrect impressions, but do not on any account prepare a host of someone else's observations or generalisations and make him swallow those as if they were so many sugared pills. It will be necessary to formulate your schemes and spend an enormous amount of time in preparing notes of lessons and keeping records; but do not let this prevent you from providing a never-ending variety of things to be watched and studied. And, above all, do not forget those delightful conversational lessons which crop up at every turn and on every conceivable subject. A few minutes daily spent in this manner will be rewarded a thousand times over in the added quickness of mental grasp, alertness, and intelligence of the child. Again, when a new thing is noticed or a new word found give the child a chance to *find out for himself* what it is and what it means; and for this purpose it will be necessary to have a decent library of reference books in each school. Local Education Authorities have been rather slow at providing the necessary books, and in my own case I have to thank a good many people who have either seen or heard of our weak spots, and have given us willing help. Two or three good dictionaries, a decent encyclopædic dictionary, elementary books on botany, forest trees, insects, mosses, ferns, and birds: a good reference atlas, *well indexed*, and a number of smaller ones—one for each child: Whitaker's, or some other good almanack, containing up-to-date statistics, a good general geography and grammar, and a gazetteer of the British Islands somewhat after the style of Bartholomew's, based upon the latest census returns. Ordnance maps may now be had fairly cheaply (although, like most commodities, prices have gone up) from the Board of Agriculture and Fisheries; and these will be found most helpful in teaching local geography. Each bird's nest, flower, or tree noticed may be found and indicated on the map (the 6 in. scale being most serviceable), and these, with the accompanying note-books, apart from their usefulness in the education of the child, form a very interesting record of the natural history and other lore of the locality. Each week a child is told off to keep the "official" record of temperatures, rainfall, barometric pressure, children present, wind, and sunrise (winter)—while another makes diagrammatic representations or graphs of it on another and larger sheet, both of which are suspended in school and always accessible to the children for verification. It need not be thought that this involves a big outlay in apparatus. The barometer consists of a couple of pounds of mercury, a shrimp pot, and a 36 in. glass tube of $\frac{1}{8}$ in. bore, which may be had for a few coppers. The graduations are made in tenths of an inch on a piece of paper gummed to the top end of the inverted tube. There is no attempt at graduation and correction to sea-level; but it serves to indicate roughly the daily variations of atmospheric pressure. The rain-gauge is equally simple and inexpensive, consisting as it does of a copper funnel of regulation diameter (5 in. in this case) and a graduated glass measure. The collector may be a sweet-bottle or other cheap bit of apparatus.

In geography, history, literature, and other subjects there are plenty of available objects in the immediate neighbourhood. Ancient records (often unfortunately unpublished) may be consulted, and thus form a basis for the study of history by beginning at home. Old family histories, local events in past ages, old buildings with dated stones, stirring times of battle, and the no less important records of the development of industries, and the improvement (or otherwise—very often otherwise) of the social condition of the people.

In Rural Schools I would also plead for permission to visit the various subjects they are studying in their native haunts—or *in situ*. A bird's nest, a tree, or a flower need not be destroyed because it happens to be the subject of study any more than a castle or a battlefield. Obviously, therefore, it will be to the advantage of the children, both physically and mentally, that they should be allowed to "play" at *outdoor school*. This may often be done also with reading and conversation lessons, that is, they may be taken in the open-air.

A somewhat meagre and imperfect outline, this, of the ideal one would like to see attained, but sufficient, perhaps, to indicate that the study of Nature and of one's surroundings has a distinct and permanent educational value, and that Nature has, and must always have a refining and elevating influence. Lovingly and enthusiastically undertaken this work will not only aid in the development of the child's faculties, but it will lead him in after years into pleasant paths through fields and woods—not always aglow with flowers, perhaps, but seldom lacking some marvel of creation that will arrest attention, gladden the eye, and have its humanising influence, for, as Wordsworth says:

> Nature never did betray
> The heart that loved her; 'tis her privilege
> Through all the years of this our life, to lead
> From joy to joy.

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